

Domestica, Achebe

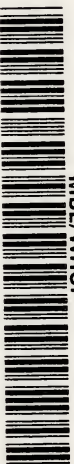
Episodes of insect life

Jordan, 1849

(3 vol/s.)

by A. Heikkinen (prev.)

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No. I.



EPISODES OF INSECT LIFE.

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PLATE I.

THE LIFE OF THE BUTTERFLY
 FROM THE EGG TO THE ADULT STATE
 INCLUDING THE HISTORY OF THE
 MOST INTERESTING SPECIES

By J. G. KILLBUCK

1870

INSTITUTION



1870

Frederick Clarkson,
NEW YORK.

EPISODES
OF
INSECT LIFE.

BY *ACHETA DOMESTICA*, M.E.S.



"So issue forth the Seasons"—*Spencer*.

LONDON:

REEVE, BENHAM, AND REEVE, KING WILLIAM STREET, STRAND.

1849.

06 26566 June 8



REEVE, BENHAM, AND REEVE,
LITHOGRAPHERS, PRINTERS, AND PUBLISHERS,
KING WILLIAM STREET, STRAND.

A2168

TO
THE REV. WILLIAM KIRBY, F.R.S.,

AND

WILLIAM SPENCE, F.R.S.,

WHOSE DELIGHTFUL WORK ON ENTOMOLOGY, BY CREATING A TASTE FOR
ITS PURSUIT, HAS GIVEN

RISE TO THE FOLLOWING UNPRETENDING PAGES,

AND TO

PROFESSOR EDWARD FORBES, F.R.S.,

WHOSE HUMOROUS SKETCHES OF ZOOLOGICAL HUMANITY
MANIFEST THE PROPRIETY WITH WHICH THE INSTINCTS OF ANIMALS
MAY BE ILLUSTRATED BY THE AID OF AMUSING ALLEGORY,

This Work

IS RESPECTFULLY INSCRIBED,

BY THEIR VERY OBEDIENT SERVANT,

THE AUTHOR.

Miss L. M. Fulger

P R E F A C E.

THE following Essays have been written, not with a view of teaching Entomology as a science, but of affording such a measure of acquaintance with the habits of the Insect world, as may serve to promote the ulterior and more useful design of cultivating the rudimental seeds of systematic investigation. For this, with many, sufficient leisure, fitting residence, and other appliances may be wanting, but few can entirely lack opportunity for becoming more observant of Nature's wonders, more impressible to her influences and her teachings, or more alive to the superior intelligence visible in her works. On nothing, perhaps, are the signs of that intelligence more obviously impressed than on the operations of Insects, which, as creatures pre-eminently under the rule of instinct, attest as pre-eminently that

“The *mind* which *guides* them is divine.”

Thus contemplated, the constructive skill, selecting judgment, and seeming foresight of these tiny agents, as applied to the preservation of themselves or offspring, are exalted into themes of surpassing interest; and, as in all created things there exists a purpose out of and above themselves, it is evident in these displays of instinct, that the same informing principle which serves in its operation to direct the animal actor, is intended by its exhibition to amuse and to instruct the rational spectator. To further, however little, these latter purposes is the design of the ensuing pages; it only remains to add a few words explanatory, if not propitiatory, of the mode in which this has been attempted.

It is an approved device, and not a new one, to employ amusement as conducive to higher purpose. To besprinkle

“Di soave licor gli orli del vaso,”

to “sweeten the lip of the cup,” whether it contain instruction in things natural or things moral, has been the practice in every work seeking popularity, from the sacred Epic to the familiar Exposition; but to that now attempted of the ways and wonders of the Insect world, it may possibly be objected that not merely is “the cup” sweetened at its lip, but that

mingled in its contents are ingredients foreign and discordant : in other words, that the descriptive may be deemed too highly coloured by the imaginative. So, at first sight, it is not unlikely to appear, to those especially who possess no previous acquaintance with the subject; but as this is partially unfolded, it may perhaps become apparent that allegoric fable, poetic association, and moral analogy, are no forced productions, but only the luxuriant growths (leaf, flower, and fruit) of that branch of the tree of knowledge which belongs to Insect history.

It may also be noticed that in the still prevalent, though daily lessening, indifference or distaste to members of the Insect race, there exists an obstacle to their general study only to be overcome entirely by waging gentle warfare against prejudice, where prejudice is always seated, in the feelings, and not in the understanding. To make Insects objects of liking would seem, therefore, the best preparatory step towards making them subjects of learning; and to accomplish this, the writer has endeavoured to associate them as much as possible with our domestic habits,—the summer's stroll,—the winter's walk,—whilst exhibiting them in their numerous relations with other departments of Nature, especially the

Floral, high as this already stands in universal love and admiration.

To Entomologists, those especially whose pens and researches have opened varied paths to their pursuit, little information is offered in the following discursive sketches, yet it is diffidently hoped, that even readers of this description may find amusement in an hour of leisure from the inspection of a light and fanciful fabric based upon foundations of their own laying. From their intimate acquaintance with the body of the structure—the Real—they are, at all events, well qualified to appreciate the fitness, if fit, of its allegorical decoration—the Ideal.

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BUTTERFLIES IN GENERAL.

Various species just risen and bursting from their chrysalidan shrouds, mount towards the skies or repose upon everlasting flowers.

The lowest Butterfly to the left is the Peacock, *Vanessa Io*, that above is the Common Copper, *Lycæna Phlæas*, the next above is the Common Blue, *Polyommatus Alexis*, and that to the left is the same, showing its under-wing painting. Above these, upon the sprig of flowers, is the Lady of the Woods, *Anthocharis Cardamines*, and over this to the right is the Brimstone, *Gonepteryx Rhamni*, having the Hair-Streak Purple, *Thecla Quercus*, to the left and the Silver-washed Fritillary, *Argynnis Paphia*, above. In the centre is the beautiful Swallow-Tail, *Papilio Machaon*, to the right below is the Red Admiral, *Vanessa Atalanta*; perched above, showing its under-wing, is the small Garden White, *Pontia Rapæ*; over that, a little to the left, is the Meadow Brown, *Hipparchia Janira*, and uppermost upon the flowers is the Common Copper, *Lycæna Phlæas* exhibiting its under-wing. Suspended to the branches beneath are numerous chrysalides, one of which exhibits the small Tortoise-shell Butterfly recently emerged.

To the symbolic meaning of this picture it is scarcely needful to point, for in the Book of Nature, so truly described to be a Book of Emblems, the

history of the fugacious Butterfly, as typifying the flight of the immortal soul, stands foremost for clearness, for exactitude, for beauty, and for solemn import.

Title-Vignette.

So issue forth the Seasons.

First we have WINTER in his merriest mood, represented by the Cricket, bedecked with Christmas holly, and alive with fun and jollity. By his right hand he holds the Brimstone Butterfly, emblem of SPRING, primrose of papilions in habits and in hue. Beneath, the jocund Grasshopper linked to the above by a vernal wreath, figures the bright SUMMER and in the glowing Peacock Butterfly, rich in her velvet train as the autumnal flowers she frequents, we welcome AUTUMN, bearing the ripe sheaf and presenting her merry associate with the fruit of the vine.

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“Such mistresses dare never come in rain

“For fear their colours should be washed away;”

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THE CRICKET. INTRODUCTORY.

“And Crickets sing at the oven’s mouth,
As the blither for the drouth.”—SHAKSPERE.

AN eminent French Entomologist, Réaumur, has very justly observed, that “it is certainly no fault of Nature’s if we do not possess works upon Insects which *everybody* may read with pleasure.”—His most amusing, though rather voluminous publication, ‘*Mémoires pour servir à l’Histoire des Insectes*,’ 1734, went far to supply, in his time, the deficiency at which he hints, and in ours, amidst the multitude of familiar books on every subject, it might certainly be supposed that there is no lack of such as would suit and please everybody on this.

No inquisitive mind need complain of any want of keys for the simple opening of that drawer in Nature's cabinet (a drawer of gems) which has been labelled "Entomology." Of these there are an abundance,—gilded keys of popular, as well as iron keys of scientific manufacture, but the still prevailing want is an incitement to place them in the lock. The works of Kirby and Spence, Rennie and Jardine, Burmeister and Westwood, may be said to furnish, pre-eminently, the gilded, or, with reference to their intrinsic worth, the *golden* keys in question; but seeing how generally even these are left to tarnish on the shelf, something would seem to be required as an incentive to their more frequent handling.

The most prevalent feeling about Insects, except, perhaps, the "busy people" of the hive or the "painted populace" of the garden, is that of indifference, if not distaste; and who of the multitude thus ignorantly prepossessed, would seek for books strictly devoted to their history, or believe that they could find interest in the mere relation of their instincts, however pleasantly detailed?

The first anxiety of a writer is, as all the world knows, to establish a kindly sympathy between himself and his readers; but how can this be speedily created betwixt one who, as an Entomologist, would seem to think of nothing but Insects, and "the many" who have always regarded them as below a passing thought? With even a slight knowledge, once acquired, of their wondrous ways, the latter will be induced to a confession

that these "Minims of Creation" are *something*, even in themselves; but it may be well, meanwhile, for him who would bring them into general notice, to invest them with the charm of adventitious interest and reflected consequence. Insects are peculiarly capable of being thus treated; for in their analogies and correspondences, illustrative and emblematic, innumerable are their relations with other things, from the most trifling objects of the world we live in, up to the highest subjects of human contemplation. Multiplied then, and still multiplying, as are books on Entomology, we venture to think there is yet scope and use for one of a character more discursive, a book not professing to teach the science, but to persuade to its study those who may have time and opportunity for the pursuit; and to show those who have not, that they may, nevertheless, find interest and pleasure in common observation (not commonly exercised) of the insect million by which they are surrounded. With a confidence that some such work might be generally read, though by no means equally assured of our ability to write one, we long had wavering thoughts of making the attempt. At last we resolved to try, reminded by a returning epoch (a brush, *en passant*, from the wing of time) that while we doubt and linger,

"La vie à différer se passe."

The end of the year was at hand: "To-morrow," said we to ourselves, "we will really begin our work for every body about Insects. This very evening shall be devoted to a final decision

on its plan ;” for under a hundred Protean forms, and almost as many different names, had our intended work been floating for months before our “mind’s eye.” Letters—Sketches—Conversations, these were familiar shapes into which our materials might be moulded ; but they seemed, in one sense, too familiar ; the public taste might be tired of these hacknied modes of dressing up the sister sciences. Besides, clothing such as this, however light, would over-much confine us in the very discursive rambles which we had thoughts of taking amongst our creepers, and fliers, and swimmers. Episodes might better serve our purpose, and impose fewer shackles on our roving fancy : Episodes, then, they shall be called—Episodes of Insect Life, providing every month a seasonable admixture of the Real and the Ideal. But to-morrow, and for a month to come, what insects will be in season ? Of all the summer myriads, the bulk have long ago expired ; the remnant, scared even by the shadow of advancing winter, betook themselves to hidden places ; and now old Christmas has benumbed them with his icy paw, and keeps them unconscious prisoners within the earth or waters.

We may still discourse, it is true, of torpid Bees, of sleeping Ants, of buried Beetles, and a forlorn few of widowed Wasps, stupified by grief or cold, sole relics of their perished race ; but what a drowsy doleful prelude would this be to the cheerful airs we would draw from the harp of nature. These insect sleepers would furnish us, with themes of life in death, for in

all of them, under forms of death, forms of vitality, arrested or unexpanded, lie hidden; as in all real deaths, merely natural, are contained the germs of life. Even this departing year does not wholly die, since being full fraught with causes (seeds which are sure to ripen into the fruit of consequences), in these it will continue to live to the end of time, aye, even to eternity; but believe, and philosophize, and hope as we may, neither death nor death's semblances are the most enlivening objects of contemplation. At all events, we felt our spirits growing flat and our thoughts confused, as we looked at our waning candle (like the year, approaching to its end), and reviewed the subjects, defunct or drowsy, from amongst which we must, perforce, choose one for that of our opening essay. Dreaminess trod on the heels of dullness, and before we had come to a decision as to what sleeping insect should constitute our commencing theme, we were ourselves nodding beside our solitary fire.

Suddenly we were awoke by a clang of bells from the neighbouring steeple of our parish-church, the requiem of the departed, and salutation to the new-born year. It was soon pealed out, and we were left once more to the silence of our little parlour, a silence which seemed deeper than usual, and more solemn, yet not to the spirit's ear unbroken; for it is in pauses such as these on life's rattling road, that the "small still voice" is always audible, unless it be drowned, as is common, by the noise of social mirth. We sank into a reverie, regretful

more than hopeful, of retrospect rather than of prospect, and in the current of mingled thoughts that rushed over it, our lately ruling and uppermost idea (that of our contemplated book) was completely overwhelmed. Of a sudden, however, it was again brought to the surface : a shrill sound broke upon the stillness ; another chorus, within the house, succeeded to the hushed peal without. The Crickets, from the kitchen below, were uplifting their chirping strains to salute, in full concert, the new-come year. We were at no loss, now, for at least one cheerful subject wherewith to commence our Episodes.— Bless their merry voices for the opportune suggestion ! Forthwith, we took up, not our pen but our candle, and descended to the lower regions, of which we found our chirpers left in sole possession. The noisy varlets broke off, instantler, in their song, and, each to his hole or cranny, scampered off at our approach ; but we captured a straggler in the very act of draining the milk-pot, and carried him off to our parlour fire-side for the cultivation of a more intimate acquaintance, and with a view to making him as well known to our readers, by sight, as he, or rather his merry fraternity are likely to be already by sound. Finish thy song there, little Master ! and, “with what appetite thou mayest” thy supper too ! said we, as we placed our lean lank-bodied prisoner beneath a tumbler, under which we were so merciful as to insert a few crumbs of bread, one of the Cricket’s favourite repasts. Aye, leap as thou wilt, and climb against gravity up the smooth walls of thy crystal

prison, there thou shalt abide till we have taken thy portrait. Yes, queer creature as thou art ! thy angular figure and round physiognomy shall be exhibited in our first vignette. Thou shalt be honoured as our opening subject, and if thy name had not served already the purpose of one, whose sympathy with thy merry chirrup has been shared by thousands, thou shouldst have given a title to our book, like 'The Bee' and other seekers and gatherers of Sweets ? Thou art, in truth, an omnium-gatherer, nothing comes amiss to thy convenient appetite, and variety must be the character of the feast we would provide, no less than of that which thou lovest to devour. True, as we have said, thou art not particular, "scummings of pots, sweepings, bread, yeast, flesh and fat of broth," thy pickings most esteemed, seem not, some of them, the most inviting fare ; yet do these dainties, each in its kind, serve to symbolize, not unaptly, the very sort of viands we would seek and set before our readers.

For "scummings of pots," suppose we say the "cream of our subject," the most light, and, withal, the richest of the agreeable matter already laid up by others, to be extracted by ourselves in the field of observation. For "sweepings" let us put "gleanings,"—Gleanings in Entomology—and we have the very term adopted by a well-known writer for his amusing anecdotes in various branches of Natural History. Then "bread", with Cricket as with man, the very "staff of life," if poverty forbid him not to grasp it, what substance more properly

symbolic of that which must form the ground-work of our book,—matters of solid fact, mixed with and lightened by the “yeast” of illustration, discursive and pictorial. As for the “flesh” and “fat,” the strongest fare on which the Cricket delighteth to regale, may they not serve to typify that principle of mental nourishment, of all the most vital, afforded by the religious contemplation of all natural objects endowed with life.

The Cricket is the thirstiest of all thirsty creatures. He is *not* therefore

“the *blither* for the drouth,”

for where no ampler supply of liquid is at hand, he is said (heed it, ye careful house-wives!) to gnaw holes in wet woollen stockings or flannel, hung by the fire to dry. Therein, also, (though in more harmless fashion), we would make him our representative, as, thirsting after knowledge of our subject, we strive to extract from it, even when seemingly most arid, a something of refreshing moisture.

Lastly, in all his doings, our Cricket is, confessedly, a pilferer, and taking, as we largely must, from stores collected by the labours and observations of others, we shall herein, also, resemble our prototype, except that we rob in open daylight, and thankfully acknowledge what we appropriate. There are yet other points of resemblance, more personal, between ourselves and the house Cricket. As with him, a warm hearth in winter and a sunny bank in summer are the seats of

our supreme felicity. Like him, also, we joy in the possession of a quiet retreat, and prefer to uplift our voice from behind a screen.

We have now set forth quite as much of our design, and revealed as much of our personality as have come connected with our immediate subject, and from the scattered grains of intimation already dropt, some prying reader may even now have gleaned more about the Cricket's ways and whereabouts than we have thought it expedient to reveal. Something more of them may be disclosed hereafter. Meanwhile, surmise what thou wilt, good gossip! but, above all, we entreat thee to bear in mind that, alike in our proper and our emblematic character, we most heartily rejoice in all that warms and all that cheers. Remember this, dear reader—and be kind! try to look sunbeams, or fire-light, on these our weak and broken chirrups, for according as thy smile shall encourage, or thy frown repress, they may speedily sink into silence, or rise into a more powerful and grateful song.



"Episodes, then, they shall be called"



THE POINTS OF OUR HOBBY.

“No joyless forms shall regulate
Our living calendar.”—WORDSWORTH.

WHAT have we here? A May Fly in January! A magnified May Fly! Verily, Master Cricket, thou dost not only magnify, but most unseasonably misplace the objects of Creation,—strangely, too, dost thou misapply them,—for in seating thy domestic self upon the back of this ephemeral high-flier, we are quite at a loss to guess thy meaning.—Then, gentle reader, guess not at all, only have patience, and all seeming incongruities shall be reconciled. Suffice it, now, that as in the Cricket we have introduced thee to our symbolic self, so in the

May Fly we would beg thee to recognise our symbolic hobby ; a hobby, we confess it, whereat even under her imposing name, Entomology, all her sister-ologies were once in the habit of kicking up their heels, as they left her disdainfully in the rear. Of late, however, she has been gaining ground, and now promises to keep up with the proudest jade among her fellows. But without invidious comparisons, let us proceed to put her through her paces, and show how in pursuit of “ charming variety ” she carries us through roads as varied. Now, like an ambling palfrey, she bears us over flowery meadows ; now, like a flying Pegasus, mounts with us through air ; now descends beneath earth’s surface ; then, plunging in the stream, opens to us new worlds beneath the waters. In these her endowments, of amphibious character, we may notice the first points of resemblance between the features of our favourite and the habits of the May Fly—*Day Fly*, we also call her, and so she is, in her brief career through the summer sky ; but before she has ever fluttered or had wings to flutter in air, each May Fly has lived in earth, aye, and under water, cavered in the bank of her native streamlet, where at present she abides. The comparison holds good still further ; no Ephemera can now disport itself in air, nor in the fields of air is there now much of pleasant pasture for our hobby ; but the Day Fly of next May is in no want of food or doubtless of enjoyment, though confined to earth and water ; and in these does our hobby still possess an ample supply of winter exercise and provender.

Dear Entomology! We have called thee our hobby, we have likened thee to a hack; but thou art more. Thou art a powerful Genie, a light-winged Fairy, not merely bearing us through earth, and sky, and water, but peopling every scene in every element with new and living forms, before invisible. For *us*, Nature has now no desert places: touched by thy magic wand, every tree has become a peopled city, teeming with busy multitudes; every flower, a pavilion, hung with gorgeous tapestry, for the summer occupation of Insect nobles, clad in velvet, gauze, or coat of mail; nay, the very moss that grows upon the tree or clothes the stone, has become to us a forest, where, as in forests of larger growth, roam the fierce and the gentle, preying or preyed on by each other; and the stone, we have only to upturn it, and we are certain almost to discover beneath, some hidden lurker, or some wondrous subterranean structure, perhaps a solitary dwelling, perhaps a nursery, perhaps a general home of refuge. Yes, our darling pursuit, of all most lightsome and life-giving, with thee for our companion, the bare, the barren, the desolate, and the death-like become instinct with life. The arid heath, the decaying tree, the mouldering wall are converted at once into fertile fields of interest and inquiry, while the summer skies and glittering waters grow brighter yet with glancing wings and oar-like feet; and with the knowledge that both are plied by a multitude of happy creatures.

But, stand still, our favourite hobby! We must draw in

thy rein, or matter-of-fact people will declare that thou art careering with us beyond earth, or sky, or water, even into the intangible realms of Imagination. They would do us wrong, but to prove ourselves as fond of fact as they, and thou, our favourite, no phantom horse, we will e'en dismount, and ere we start with thee on fresh excursions, tell something of thy birth and parentage, and point out other of thy excellent merits in more sober fashion.

Entomology signifies the study of Insects, from whose peculiar formation the term owes its origin; the bodies of this part of the Animal Creation being *insected*, or divided into three principle parts, head, trunk, and abdomen, besides other subdivisions. For this reason, the Latin name *Insecta*, Greek *ἔντομα*, from whence Entomology.

Now of these little insected animals, thus curiously divided from the rest of animated nature (except the *Crustacea*, once also classed as Insects), many great men of antiquity, philosophers as well as poets, thought no scorn. Among these, Aristotle, Pliny, and Virgil wrote of them largely, though, indeed, somewhat erroneously; the former, with other similar fables, asserting not only that flies were meat-engendered (a notion still ignorantly entertained), but that they also inherited a disposition, fierce or harmless, according to that of their flesh-fathers, when in life. Quite as absurdly, though more poetically, Virgil says or sings of Bees that

“From herbs and fragrant flowers
They call their young.”

With these and similarly confused notions about the origin of Insects and other created beings, their beauties and wonders had, certainly, much less claim upon the notice of the ancients than on ours, who have acknowledged them for the work of one Divine Hand, and regarded them as visible tokens of that Divine Mind of which they are thus permitted to afford us a partial revelation; but since with incentives comparatively slight, the study of nature in general, and of Insects in particular, was yet deemed by enlightened heathens worthy of infinite attention, is it not strange that the classic robe which has so often lent a dignity to a host of insignificancies, should not at least have defended poor Entomology from neglect or ridicule? Yet so it has not been.

On the revival of general learning, there appeared in Europe a few works in which Insects were noticed among other objects of natural history; but it was not, we believe, till the reign of Charles the First that they obtained in England the honour of a whole Latin book to themselves, and were introduced to the learned public in Mouffet's *Theatrum Insectorum*. The history of this book is curious, and in a manner correspondent to the ephemeral subjects on which it treats; for in the successive authors who began, continued, but never lived to finish it, we are furnished with striking instances of the fragility and uncertainty attendant on the designs and labours of the Insect—Man. The foundations of the work were laid by the celebrated Conrad Gesner and Dr. Wootton; and upon these

a considerable structure was raised by Dr. Penny, a physician and botanist in the reign of Elizabeth, but he too, after fifteen years of partial employment, died and left it incomplete. His manuscripts, purchased by Mouffet, a contemporary, also a physician, were arranged, augmented, and prepared for the press; but ere he had time, according to his intent, to dedicate this fruit of his own and other men's labours to the maiden Queen, he, as they had been before him, was summoned to submit all his works to the judgment of the Court Supreme. His book lay buried with him, till, in the next century, it was once more brought to light, and published by Mazerne, a court physician. An English translation* followed, and a curious old book it is, giving a complete view of all that was then known on the subject of Insects, with much information since confirmed, and with it an infinitely larger portion of gravely and quaintly affirmed nonsense, perhaps not the least amusing part of the production. It is amply adorned with figures, many of them amusing too, from their very imperfection. Some of the greatest men are, perhaps, to be found among those who pursue little objects,—those, we mean, held as little in general estimation; such people are great in their discernment to discover the real worth of what is commonly despised, and they are greater still in their independence of spirit to follow up objects whose pursuit exposes them to ridicule, and whose attainment is little likely to bring them

* Theatre of Insects, Mazerne.

admiration or repute. Well, in the 17th century, several gifted individuals, in this sense very great, appeared and took neglected Entomology by the hand. Chief among these were the English Ray and the Dutch Swammerdam. Insects were then found capable of exciting enthusiastic energy, incomparable patience, and fervent piety. "Oh," says Swammerdam, while studying for his work on the habits and structure of Bees, "Oh, for one year of continued light and heat, that I might work without interruption!" Such was his enthusiasm. In his admirable dissection of Insect anatomy he has left a record of his perseverance, equalled, however, by Boerhaave who could employ a whole day in clearing one Caterpillar from its fat, and by Lyonnet who counted 1804 aerial tubes in the body of another, whose structure formed the chief study of his life; and for piety, that of Swammerdam finds ardent expression in the following apostrophe, drawn forth by the wonder and beauty of those divine mechanisms which patience had laid open to his own and others' observation:—"Oh God!" he exclaims, "how Thy works infinitely surpass the reach of our feeble understandings; all that we actually know of Thee, or ever can, is but a faint and lifeless shadow of Thy adorable perfections, in contemplation of which the brightest understandings grow bewildered!" With the same feelings, inspired by similar objects, our venerable Ray composed his work called 'The wisdom of God manifested in the works of Creation.' And again, it was the interest excited by

Insect forms, their singularity and surpassing beauty, which, in the same era, inspired the artistic pencil of a Merian, and induced her, with a woman's energy, to cross the seas, and brave the noxious climate of Surinam, for the sake of its curious and splendid Insects. These she has as truthfully depicted;* though misled, perhaps, by her own enthusiasm into a too ready credence of the marvellous, the accuracy of her accompanying descriptions has been more than questioned. Thus in the latter end of the 17th and begining of the 18th centuries, a few among the most highly endowed with talent, learning, and piety, considered the study of Entomology not unworthy to constitute the grand pursuit of life; yet, at this very period, in such low estimation was it generally held, nay, so extravagant or childish was it deemed, that we are told by Kirby of an attempt to set aside the will of a rational woman (Lady Glanville) on the ground of lunacy, evinced solely by her fondness for collecting Insects. Ray himself had to appear as a witness of her sanity. How was it that his own escaped impeachment? For all this, and calmly smiling at the scoffs of the vulgar ignorant and vulgar learned, Entomology marched on steadily, supported by a phalanx of staunch professors, such as Réaumur (called the French Pliny), Lyonnet, Bonnet, Gould, the historian of English Ants, the Swede, Baron de Geer, and at the head of all, his illustrious countryman, Linnæus. Of the previous labours of Ray and Swammerdam, the chief had

* Insects of Surinam.

been directed to the internal organization of the Insect race, a theme, though of infinite curiosity, by no means adapted in its elaborate details to attract the general reader; but the naturalists of the 18th century above noticed (with the exception of Lyonnet), devoted their attention more to the works and ways, the structure and economy of Insect communities or individuals: subjects highly amusing, and except in the nearly fabulous narrations of antiquity almost new; yet for all this, “charm she never so wisely,” Entomology had still few charms for the public. De Geer, whose History of Insects has been pronounced above all praise, on publishing the first volume of his work in 1752,* found it so ill received, that instead of being devoured by readers, numerous impressions were devoured by the flames to which they were consigned by the disappointed author. In nineteen years, however, a great change came over the public taste; the second volume of his work was eagerly received, and De Geer presented a copy of it to the then “select few” who had bought the first. The *Mémoires*† of Réaumur, though less systematic than the above, are yet more interesting, and, in spite of their prolixity, so full of curious matter, apt illustrations, and lively remarks, that a more amusing book can scarcely be found even for the general reader, provided he be a person of taste.

From the glow-worm light in which it had so long glimmered, Entomology now shone, as it were, in the radiance of

* *Mémoires pour servir à l'histoire des Insectes*, 1752-82.

† *Mémoires pour servir à l'histoire des Insectes*.

a swarm of Fire-flies. Yet this, her augmented brightness, did but serve for a season to make her a more conspicuous butt for the shafts of ridicule ; and many a quill was shot, in derision, at this persecuted science, which could only have been aimed with any show of fairness at her merest classifiers and collectors, such as every branch of Natural History may number among the lesser minded of its votaries. But even persons like these, who would seem in the words of the satirist to

“Think their eyes
And reason given them but to study flies,”

may still perhaps be followers of objects not a whit less insignificant than those which occupy their neighbours ; only that the pursuits of the many escape ridicule, because they are sought along the high-ways instead of the bye-ways of wasted life. But the laugh at Entomology is nearly spent. Known professors of the science, and members of its “Society,” may now assemble in council and communicate their observations and enquiries without fear of becoming themselves subjects for a commission *De lunatico inquirendo*, and Butterfly-hunters, net in hand, may now chase their game without being themselves made game of. In recent times, the works of Latreille, Lamarck, Cuvier, Curtis, Leach, Macleay, with many more have been gradually improving the science which their names adorn, while Kirby and Spence,*

* Introduction to Entomology.

Rennie,* Jardine,† Knapp,‡ Burmeister,|| and Westwood,§ have published their researches to the multitude in works, which, were they as popular as they should be, would have a place not only in every library, but in every body's hand, to serve literally as hand-books in their country rambles.

Return we now to the great volume on which the above are but imperfect commentaries!—that volume, bound in ethereal blue, and at this our chosen chapter, printed in living characters on leaves of every tint from vernal green to the richest hues of autumn; nay, on the brown or snow-white sheet of winter, for at no season is the student of Entomology presented with an entire blank. Even in the month of January, besides our chirping representative of the hearth and certain Gnats which disport over frozen pools, a sprinkling of other Insects may be seen melting their frosted fluids in the wintry sunbeam or the sheltered window. Numerous others, hidden from all but practised eyes, are laid up snugly in various hybernacula of which the discovery adds a zest to their pursuit. Of these, some are concealed in caverns under ground, some in beds of mud beneath the water, some are ensconced in hollow trees, and behind or in crannies of their bark, while others lurk within the tunnels of dry perforated stalks, sleep within the domes of protecting gall-nuts, or lie

* Insect Transformations, Architecture, and Miscellanies.

† Naturalist's Library: Beetles and Butterflies.

‡ Journal of a Naturalist.

|| Manual of Entomology.

§ Introduction to the Classification of Insects.

defended from frost and famine in other homes of shelter, such as the care of Him who careth for all, has led them to seek out.

Using our hobby as a hunter, we may pursue our game for two different objects; that of observation or collection, or both combined. And we may collect for two different purposes; that of scrutinizing living instincts, or arranging and looking at dead objects. The relative value of one and the other is as that of an apple's rind to its juicy pulp; the rind is not without its use and beauty, while connected with the interior of the fruit; neither is a collection of Insect specimens, as connected with the juicier matter of the study they illustrate. As for him whose delight in natural objects, of what kind soever, consists solely in their amassment, or is circumscribed within the walls of his cabinet, he is no naturalist at all, a mere kindred spirit of the Bibliomaniac, and little better than the miser whose iron heart is in his iron chest. Neither are specimens necessary to the study of Insects, though, like the Hortus Siccus of the botanist, they are of great assistance, especially at its commencement. Subsequently, if you should desire to collect, we would recommend the pursuit, for this purpose, of one selected tribe; say, Beetles, as the most varied and perfect, or Butterflies and Moths, as the most elegant and interesting of the Insect classes. The study of the latter only, in the search after Caterpillars, the feeding them on fresh leaves of such plants as they frequent, and the opportunities thus afforded of watching them through their changes,

transformations, and most ingenious labours, will afford ample occupation and amusement for nearly every season of the year, and moreover present us, if we choose, a collection of cabinet paintings, in whose exhibition and contemplation (always with reference to their Great Designer) we may take a laudable delight. But here, ere it be declared, let us anticipate the objection of some gentle reader who, numbering us with those who kill Butterflies for amusement, may have already pronounced us worse than a Domitian, who killed flies for the same purpose only. Now there is no subject, probably, on which there has been more "straining at guats and splitting of straws" than that of cruelty to animals as connected with our own pleasures. Take for example the gentle Poet of the Seasons, that most eloquent advocate of oppressed animals; yet Thompson was a fisher—not an angler, mark ye, but a fly-fisher. Accordingly, "the well-dissembled fly" he considers a harmless ruse, and bids us

"——— Fix with gentle twitch the barbed hook ;"

and then adds, beseechingly,

"But let not on that hook the tortured worm
Convulsive twist in agonizing folds !"

forgetting the convulsions of the agonized *Fish*, with a hook in its lacerated jaws, and gasping for its native element.

And now, as a collector of Insect specimens, though that, save for a temporary purpose, is not our profession, let us endeavour, with what dexterity we may, to split our own

straws, or lay hold on such of them as may serve to rescue our hobby from a flood of censure. To take the little life even of a Butterfly is confessedly, and ought to be, matter of pain, and is, so far, a set-off against the pleasures of an Aurelian. Nor is it a set-off which use diminishes, for the more we notice the beauty of Insects and the more we learn of their movements, the greater becomes our reluctance to mar the former or arrest the latter by an unwilling hastening of the hand of death. It is only our moral right to do so on sufficient occasion for which we would contend. True, this is the very thing that all are desirous of proving, who, with old Isaac, feel in the cruel pleasures of their darling pursuits, that "other joys are but toys;" still, argue as they may, on no principle can it be allowable to toy with torture. To take life quickly, and with far less suffering to the individual than what in the common course of nature it will for ever be liable to undergo, all must admit to be a different matter. "Well, be it so," now retorts, perhaps, some fair and loving champion of the weaker cause; "yet we doubt your privilege to cut off the delight of a Butterfly, taken 'in haste' among the beautiful flowers, for the sake of your own, to be taken 'at leisure' in the scrutiny of her beautiful wings." An "unkindly cut," we own, but the moral right we still assert. Pleasure for pleasure, compare the sensual pleasures of a Butterfly versus the mental pleasure of a Man, such as can scarcely fail to be excited by a close examination

of nature's miniature masterpieces of painting and mechanism ; and, for once, we may fairly claim for ourselves "*le droit du plus fort*," as one which, if it so please us, we may justly exercise.

For Aurelians, or collectors of Moths and Butterflies, this month and the following constitute one of the great harvest seasons. Trowel in hand, they are now repairing to the leafless woods, where carefully digging a few feet around the trunks of the trees, they "disquiet and bring up" from their winter catacombs, the mummy-like aurelias of various Moths which, as Caterpillars, have fattened in summer on the foliage above. Such as are disposed to become Aurelians themselves, must have in readiness for their treasures, thus exhumed, boxes of wood or pasteboard partly filled with vegetable earth, and covered at top with gauze. The Chrysalides consigned to their earthy bed, there should be laid over them a green coverlet of moss, which, once a fortnight in winter and oftener in summer, should be steeped in water for the purpose of giving moisture to the mould beneath.

Among the numerous "*projets*" of Réaumur, suggested by his favourite pursuit, was one for the establishment of a sort of public menagerie for Insects, and perhaps, in the present speculative era, a worse scheme might be hit on than the opening of an Entomologic Garden. Who knows but that, by help of such adjuncts as flowery walks and Fêtes al Fresco, ladies might be tempted to face Ant-lions "at home" in their sandy pit-falls, as well as Man-lions, not at home, in their iron

cages, and condescend even to take a general survey of the figures and fashions, the costumes and customs of other Insect tribes, when so collected in a convenient focus as to require only the trouble of looking at, instead of looking for. Might we not insure a modicum of royal and noble patronage by the introduction of some such foreigners as a company of Walking Leaves, or a group of Spectral Branches from China, providing a grand morning concert of screaming Cicadas from Greece or Italy, and an evening illumination of Chinese Lanthorn Carriers and American Fire-Flies.

But to leave trifling, let us now recur to that perpetual charm of the Insect world which consists in its intimate connection with the vegetable kingdom. Viewed according to their mutual relations of use and adaptation, the flower and the leaf seem almost instinct as well as associate with animate existence, while their Insect frequenters appear, in return, to have borrowed a share of floral elegance and sweetness. Various writers on Insects* afford partial information as to the plants on which they are generally to be found, and a little French work† treats wholly on this subject; but it is still very imperfectly explored, and sure to be attended in its cultivation with discoveries of new Insects, and unobserved habits of those already known. As an instance of their numbers and variety we are told that one collector found in

* Curtis in his *British Entomology*; Sammouelle in the *Entomologist's Companion*; Westwood in his *Arcana*.

† *La Flore des Insectophiles* by M. de Brez.

forty days, between June and the beginning of August, no less than 2,400 specimens and 100 new species, not including Caterpillars. We have said that Insects are to be found everywhere, but if asked the best of all places for finding, and the best of all ways to seek them, we should answer, in your own garden, be it ever so confined, and by close examination of every tree and plant it produces—flowers, leaf, and stem, down to the very roots, and even below them. Scrutiny like this will make visible a multitude of strange little animals, and half visible a multitude of their wondrous ways, to be made gradually plainer by further exercise of eye and mind; for we can tell you, that in the divinely directed doings of the meanest of them all, there is something worth the looking into. Lord of Creation as you are, you will soon see how the Insect is permitted to play the *little Lord* too, over the “good creatures” of the kingdom below him, and how, with this power, he has had conferred on him the skill to employ them (each according to its kind) for habitation, for food, for clothing, and for pleasure. Things such as these have a higher claim upon your interest and admiration than the mere external beauty even of a flower garden, and when the flowers have all departed,—even now, when the leaves have gone the way of all things verdant, they will furnish you with novelties to look for, and forms of vitality to examine. On the leafless branches on which at present you may vainly seek for a budding promise of spring, you may yet find a promise of something more animate—a group

of Insect eggs destined to emerge into life, almost simultaneously with the opening of the adjacent leaves sure to be in readiness for the infant Caterpillars. In this, who can say that Insect eggs are objects too small for admiration, whilst they are, besides, both curious and pretty on account of their variety of arrangement, shape, colour and sculpture,—yes, for the design of their sculptured patterns. We do not magnify, as you may prove by placing the next you find beneath a magnifier.

Now, all ye idle dwellers in pleasant places (for to you especially we address ourselves), what say you to our hobby? Our Horse of Enchantment, which, like the Brazen one of Fairy Tale, and unlike most other hobbies of real life, has yet the further merit of costing nothing for its keep. “Why, master Cricket,” responds perhaps one of our pursuitless plodders, or a busy wight among the already mounted; “we have yawned over the catalogue of thy favourite’s excellencies, and after all, the most we can admit in favour of thy hack is, simply, that it seems to suit its rider. Thou hast painted it indeed with prodigious pinions, and dost prate finely of being carried up and down, and hither and thither, on thy boasted Bucephalus; yet do we still set it down, even on thy own showing, as of all steeds most mincing, tame, and quiet, fit only for the riding of a child or of a sexagenarian; just the thing, therefore, for a man such as thou, master Cricket, hast figured thyself to be, a retired gentleman of exceeding light weight (except in the scale of entomological society), thy winter

fire the centre of thy world of comfort at home, the summer's sun the centre of thy world of amusement without. The world proper, the social, stirring, busy world, having, we suspect, long ago laid thee on its shelf, a sort of cabinet antique thyself, thy cabinet pursuit is all in character!" Well! be it so, good reader, and whether, as to our person, right or wrong, we thank thee for having thyself hit upon yet another and a crowning commendation of our hobby, and one, moreover, which will shew further the fitness of the figure by which we represent it. Of the May Fly more in due season, but what common observer, what common fisher knows not that the early morning and the sunset eve are the times it always chooses for its sportive exercise. In like manner, the pursuit of Entomology, in common more or less with all those directed towards natural objects, is one suited especially to the morning and evening of life, least of all perhaps to its active hey-day. Somebody has said, we believe, justly, that "as our other loves and likings weaken, our love of nature strengthens." This is a yearning kindly implanted in that nature which we call our own, and well and happy is it when, in lieu of withered pleasures, we have leisure to cultivate within us such good seed of calm and innocent enjoyment, as may serve to adorn our autumns with something of the verdure of a second spring. As we each in our own career are compelled to take the downward road, we shall surely desire, if ever, to exercise our several hobbies to some worthy purpose, but how

few of them are capable of a single service, except to amuse the little hour of life, or hardly this; for are not most of them discarded by their riders, as worn out before them? But it is never thus with the gentle steeds which have borne us through the flowery paths of nature. To the end of time these will carry us; nay, they will do more, for where is the path of nature which leads not from the world we live in, ascending to its Mighty Author and to the worlds unseen, of which in this, and in its minutest objects, we dimly discover innumerable types and shadows? Will not then our mounted May Fly, alias Day Fly, serve to symbolize an innocent and pleasant pursuit, such a one as may help, at all events, to make the year pass as a day, and that a day of May?



To the end of time this will carry us



FLIES IN WINTER,—AND A FLY LEAF.

“And his two pretty pinions of blue dusky gauze,
Are glued to his sides by the frost.”—WORDSWORTH.

The Flies are gone, but where are they gone to? that is the question. At the close of summer, when they are busy and buzzing around us in the shape of a visitation, it is certainly no easy matter to let them “pass by us as the idle wind;” but in one respect they are, to most people, like the wind too, since they scarce know whence they come or whither they go. Doubt the first, as to whence they come, is not difficult to solve, though perhaps with the most presuming of Flies, as with the most presuming of folks, the more we pry into their

places of birth, the more we may be inclined (but with the insect not justly) to hold them in contempt; suffice it, that as the domestic Fly makes himself quite at home in our houses, so has his parent, in all likelihood, made herself equally free of our stables, where she finds a hot-bed for her eggs, and in the same a provision for her infant race. There, in their first and wingless state of maggot or larva, they commence, thus early, their important use of helping to rid the earth of all things that offend, and on how grand a scale they are able to carry on this operation may be estimated from the fact, that a single Fly will lay no less than 177 eggs. House Flies come then chiefly from the stable, the road, and the grazing meadow; though some nearly resembling them come from other places, and exist in their earliest state on vegetable, instead of animal substances. Among these we have noticed a very common species, which finds its first "bed and board" between the upper and under skins of dock-leaves, burrowing and feeding on the pulpy flesh. From spring to autumn, we may see them thus busily employed, merely by gathering and holding to the light such leaves as are to be found continually, *not* adorned by large, discoloured, transparent blotches, the outward tokens of their inward presence. These, from the above habit, may be ranked among a set of insect labourers or feeders of more classes than one, hence called Leaf-miners, some of whose winding ways we mean, by and by, to follow.

For query the second, and that just now more pertinent to

the season, of whither flies go on the arrival of winter, it still remains, we believe, a problem not yet completely solved even by naturalists, who have maintained opinions on the matter nearly as different as on the hybernation of swallows. A great proportion, no doubt, perish from cold or the many accidents to which their weakness and growing torpor render them, as the year declines, more and more exposed. Yet how few comparatively of the swarms so agile, head downwards on the ceiling, do we ever perceive (or our house-maids either), stiff and stark, legs upwards on the floor. That Fly survivors there are, laid up snugly in secret hybernacula, is further evidenced by the few which are often seen emerging from nobody knows where in mild winter weather, also by those more lonely bodies tempted by the warmth of the fire to creep forth even in nipping frost. Under such forlorn circumstances, a Fly becomes, to us at least, an object of absolute interest; our dislike, amounting almost to antipathy, of the intrusive, buzzing, pilfering, boozing, tickling varlet, one of the dusky legions which "possess" us in the months of August and September, is converted into sympathy for the poor mateless, friendless, shivering, silent creature, lured by deceptive warmth to quit the shelter of his winter asylum. We would make him as welcome, now, to his tiny bit or sup as the red-breast to his crumbs of comfort, and on occasion would even stretch out a willing finger to save him from a flood of milk or a morass of honey. Yet, more, when thus rescued

and set, damp or dripping, on the heated mantlepice, we have often watched with curious and interested eye the poor pilferer's gradual restoration, marking how at first languidly, and then with increasing briskness, he busies his handy paws ; now, cat-like, stroking and wiping his head and face and large moveless eyes, then with his hinder limbs performing the like operation on his wings and body. Laugh at us who laugh may, sympathy with the meanest thing in adversity needs no countenance from great names, but if it did, we might shelter our bit of sentiment from the shafts of ridicule under the broad shield of Wordsworth (the great and good) who wrote the lines of our motto, and also the following, part of the same poem on a forlorn fly tempted to his stove in Germany on one of the coldest days of the last century, 1799. After contrasting his own warm comforts, not indeed of a cheerful fireside, but of loving companionship with the shivering and solitary estate of the Fly, he continues—

“Yet God is my witness—thou small helpless thing,
Thy life I would gladly sustain,
Till summer come back from the south, and with crowds
Of thy brethren, a march thou shouldst sound thro' the clouds,
And back to the forests again.”

The poet was young when he wrote these lines, but he in whom “the child” was “father to the man,” would not disclaim them now that he is old.

If the fly were endowed with only an atom of human perception and human vanity, nothing could be more natural

than her supposing, with the little self-important busy-body of La Fontaine's fable, "*qu'elle fait aller la machine*," not merely that lumbering machine, in the days of 'le grand monarque,' y'clept a coach, but *la machine du monde*; to the progress of which she might well imagine her own march and the march of flies in general, to be necessary or mainly instrumental. How could flies think otherwise did they but know that their own mode of progression, their own method of walking against gravity, has been made a subject of most grave discussion and profound enquiry amongst the Scientific of Society. Of this more anon, but in very grave reality, and as we have already slightly noticed, the agency of Flies is much more powerful and important than most people think for, in assisting the progressive economy of our world of nature. Its "wheels within wheels" of natural machinery, which would otherwise be getting for ever clogged and impeded, even to mortal stagnation, by impurities of every description, are preserved in great measure comparatively clean and in good working order by the labours of the Fly, which, like those of numerous other minor agents, performed for their own little ends, are made by the Grand Mover of all things conducive to a grand use. "The Fly's purpose in nature," says a modern author,* "is to consume various substances which are given out by the human body, by articles of food, and almost every animal and vegetable production when in a state of change,

* Mudie.

and given out in such small quantities that they are not perceptible to common observers, neither removeable by the ordinary means of cleanliness even in the best-kept apartment.” Under this view of extensive uses, for which its structure and habits are alike admirably adapted (as well as for each other), both are well worthy of general observation and in no wise beneath the scrutiny of scientific, and, what is more, of sensible people. The mechanism even of a Fly’s foot thus regarded, we shall never be disposed to look back upon a Sir Joseph Banks, a Sir Everard Home, or a pious Derham, when busied in its examination, as upon “children of a larger growth” curiously pulling toys to pieces; and then remembering by whom that mechanism was constructed, we shall not be surprised on finding that observers, even such as these, seem after all, to have been at fault as to its true principle. On the credit of their great authority, books without number have explained, and still continue to tell us how the Fly walks against gravity with equal ease upon a surface rough or smooth, upon our windows as upon our walls, upon the ceiling as upon the floor, with back downwards and with back upwards; and yet as it would appear they have all told us wrong. They have said, and asserted as *proved beyond a doubt*, that the *sole* secret of a Fly’s marvellous walk and hold, is a vacuum, the vacuum produced by certain organs called suckers attached to the end of the foot, which either adheres by atmospheric pressure or is left free to rise, as these suckers are alternately

expanded or contracted. Yet would it seem that in this plausible doctrine of vacuity there may be a congenial *nothing* after all ; its supposed facts of foundation seeming to vanish before the asserted power of our little pedestrian to traverse the sides and stick fast to the dome of an exhausted receiver. If then it be not by a vacuum, by what something is it that she does retain her hold? Mr. Blackwall, who tried the experiment of the receiver, found also that a Fly, enfeebled by cold or other causes, would climb with difficulty the sides of a glass, ascended before with perfect ease. Further, he observed that Flies unable to stand, back downwards, on highly polished bodies, were able to do so on those slightly soiled ; and from these and other observations, considers that the apparatus whereby they effect their hold is quite mechanical, and closely analogous to the pulvilli or fine hair brushes of other Insects used as holders or supporters. This modern notion nearly agrees with that set forth almost 200 years ago by a Dr. Power,* who says that “the Fly is provided with six legs, and walks on four. The two foremost she uses as hands wherewith to wipe her mouth and nose, and take up what she eats, her other four feet are cloven and armed with little claws, by which she fastens on rugosities and asperities of all bodies, like a Cat-a-mount. She is also furnished with a kind of fuzzy substance like little sponges” (these are our suckers) “with which nature hath lined the soles of her feet, which substance

* Dr. Power's Experimental Philosophy, 1664.

is also repleated with a white viscous liquid squeezed out at pleasure to glew herself to the surface." This aid of glutinous secretion, except in a very slight degree, is now denied to the performances of our wonderful climber; *au reste*, the notion of our old Philosopher knocked down by the "vacuum," as if by an air gun, seems now set up again. But are we assured, seeing how long mistaken notions will maintain their footing, that, even now, we are perfectly correct about the footing of the Fly?

A Fly on the wing is a no less curious object than one on foot, yet when do we trouble our heads about it, except as a thing which troubles us? The most obvious wonder of its flight is its variety of direction, most usually forwards, with the back upwards, like a bird, but on occasion, backwards, with the back downwards, as when starting from the window and alighting on the ceiling.* Marvellous velocity is another of its characteristics. By fair comparison of sizes, what is the swiftness of a race-horse clearing his mile a minute to the speed of the Fly cutting through her third of the same distance in the same time?† And what the speed of our steaming giants, the grand puffers of the age, compared with the swiftness of our tiny buzzers, of whom a monster train, scenting their game afar, may even follow partridges and pheasants on the wings of steam in their last flight as friendly offerings? But however, with their game, the Flies themselves would be most

* Mudie.

† Kirby and Spence.

“in keeping” on an atmospheric line, a principal agent in their flight, as well as in that of other Insects, being the air. This enters from the breathing organs of their bodies into the nerves and muscles of their wings; from which arrangement, their velocity depends, not alone on muscular power, but also on the state of the atmosphere.

How does a Fly buz? is another question more easily asked than answered.—“With its wings to be sure,” hastily replies one of our readers; “with its wings as they vibrate upon the air,” responds another with a smile, half of contempt, half of complacency at his more than common measure of Natural Philosophy. But how then, let us ask, can the Great Dragon-Fly and other similar broad-pinioned, rapid-flying Insects, cut through the air with silent swiftness, while others go on buzzing when not upon the wing at all? Rennie who has already put this posing query,* himself ascribes the sound partly to air, but to air as it plays “on the edges of the wings at their origin, as with an Eolian harp-string,” or to the friction of some internal organ on the roots of the wing’s nervures.

Lastly, how does the Fly feed?—the “busy curious thirsty Fly” that “drinks with me,” but does not “drink as I,” his sole instrument for eating and drinking being his trunk or sucker, the narrow pipe, by means of which, when let down upon his dainties, he is enabled to imbibe as much as suits his capacity. This trunk might seem an instrument

* Insect Miscellanies, p. 91.

convenient enough when inserted into a saucer of syrup, or applied to the broken surface of an over-ripe blackberry, but we often see our sipper of sweets quite as busy on a solid lump of sugar, which we shall find on close inspection growing “small by degrees” under his attack. How, without grinders, does he accomplish the consumption of such crystal condiment? A magnifier will solve the difficulty, and show how the Fly dissolves his rock, Hannibal fashion, by a diluent, a salivary fluid passing down through the same pipe which returns the sugar melted into syrup.

Dear readers, we have been trying to do something of the same kind; to melt down a modicum from the mass of observations (you might possibly consider it a dry one) collected by the curious, concerning that not unimportant atom in creation called a Fly. But though our modicum may be but as a drop of syrup to a whole sugar-loaf, some of you, perchance, it may have already cloyed, and to some even have been tintured strongly with poppy extract. Sugar, however, as every artist in that plastic material well knows, can be made to assume every variety of shape and hue: so may the sweets of knowledge be moulded into every form and painted of every colour, and must be, to make them palatable. Hitherto we have but melted the unsullied substance drawn from fact: presently we may try to colour it, and present you with a painted sugar-plum of fiction, wherein the centre (the place of the carraway) shall still be occupied by a Fly. Meanwhile let us

admonish you that Flies are not all of the same form and species. There are black Flies and blue Flies green Flies, and particoloured Flies, big Flies and little Flies; and here we must notice that the age of young Flies is by no means, like that of young people, to be estimated by their size.

The Fly is a perfect Insect (or Imago), having already passed through its two preparatory stages of transformation, those of Larva and Pupa (see vignette), corresponding to what, with the Butterfly, is more generally known as Caterpillar and Chrysalis; so that, like the Butterfly, when winged it grows no more. Those middle-sized Fly gentry, also nearly equal-sized, which form the main body of our parlour visitants, are altogether a different species to those of much lesser or greater magnitude, such as some tiny frequenters of flowers, the bouncing Blue-bottle, and the black and grey-chequered Blow-Fly, those pests pre-eminent of the larder, which, as every cook knoweth, are neither

“Hatched on the road—nor in the stable bred.”

Numerous gay coloured varieties may be seen between spring and autumn and in September nearly all together, grouped in a *tableau vivant*, settled and sipping on the honied clusters of the Michaelmas daisy, that last starry heaven of their existence, at all events for the year. Later still, towards the end of October and beginning of November, when taking a noon-day walk under a southern ivy-crested wall, you may be sure to see some or all of them come out to meet you from their dark green bush

of shelter. Even now, if you examine closely between the wall and the bearded ivy stems which embrace it, you may detect behind them many a refugee of the revolutionary year, and you may, perhaps, be rewarded for your trouble, by turning out from the same shelter, in lieu of a sleepy Fly, a hibernating Butterfly—

“Startling the eye
“With unexpected beauty.”

Once more to our picture.—You know, we suppose, that the Fly has a pair of wings, but a hundred to one, if one of you out of a hundred has ever noticed that she has also a pair of winglets (or little secondary wings), and a pair of poisers, drum-stick like appendages between the main wings and the body, employed for assisting and steadying her flight. These poisers are much more conspicuous and easily observed without a magnifier in the Gnat and in the Father Longlegs, insects belonging to the same order as Flies.

Did it ever occur to you to notice the prismatic painting of a Fly's nervous pinion—the iridescent colours wherewith its glassy membrane seems overlaid? If not, only look, we pray you, in a proper light at the next of its kind you may chance to meet with, and if, as is most likely, it comes to tell you a pleasant tale of approaching spring time, we are verily sure that you will see a hundred rainbows painted on its wing.

A FLY-LEAF.

That

“Great events from little causes spring”

is a truth which we have all learnt fifty times over from book and from experience. Pope Adrian the 4th, under his plain English name of Nicholas Breakspear, is recorded to have been choked, while drinking, by a Fly, which, says old Fuller, “in the large territory of St. Peter’s patrimony had no other place to get into.” Now since a real Fly stands thus chronicled, in history, as having marred the golden fortunes of a mighty prince, surely we may be permitted (in romance) to make an imaginary Fly a grand agent in mending the iron luck of an humble Poet.

Our friend H— had the misfortune to be cast up a poet on the stream of Life, since, in this age of mechanism, it has been turned into a mill-stream. Consequently, he found himself held as a mere bubble in the froth or scum of society, and his residence accorded perfectly with such estimation. He was the highest occupant of a house in a low London neighbourhood, where, nevertheless, he was looked down upon as a nobody; and no wonder, for next beneath him, in descending order, a dancing master demonstrated for sixpence a lesson the position, that “manners make the man;” under him, albeit above him, a

tailor on the first floor exemplified by a flourishing trade, that "clothes make the man;" while a pawn-broker in the shop below, proved beyond a doubt, by his golden rule of three, that "money makes the man." It followed, therefore, that our hapless scribbler, scant of "money," scant of "clothes," and, from an awkward consciousness of such deficiencies, by no means free and easy in his "manners," was set down by his landlord, the man of money, and by his fellow lodgers, the man of catgut, and the man of cloth, as nothing like a man at all, but a mere bubble, as aforesaid, in the scum of society.

Yet as bubbles, even soap bubbles, will sometimes rise heavenwards with a luminous display of rainbow colours, so there were seasons when the spirits of this nonentity would rise from his sky-parlour to the sky above him, and return with some obsolete and child-like notion that "God makes the man," and that he had been made in a mould at least as perfect as his fellows. There were moments, even, when this inflating consciousness would come drest in prismatic hues, and when the same nonentity would fondly fancy that the sun of the world now hidden from his view behind the clouds of friendlessness and want, would one day burst forth upon the bubbles of his fancy, as they ascended, balloon-like, amidst the applause of approving thousands.

Poor H— was a worker in the tread-mill of low periodicals, wherein, for ever climbing, each weary round of the month and year left him just where he was at the beginning; but in spite

of this his daily labour, he had taken hours, which should have been of rest, for independent composition. One poem, a ponderous epic, with his name on the title-page, had already been sent abroad into the world; but it had gone forth, like its author, unfriended, ill drest, patron wanting, paper and printing paltry. Its reception was accordant; if H— had thrown a stone out of his garret window, the passing multitude (at least if it had fallen harmless as his poem) could only have trodden on or over it the same. Yet was he still sanguine and would still believe that his neglected work, stone-like, as he proudly fancied, in solid merit, might one day serve for a pedestal whereon his laurelled statue might be planted. But few are the pedestals formed of a single stone. To complete *his*, he must, he thought, lay one upon another; so lighted to his labour by the flicker of hope's torch and the flare of tallow candle, he went on working (blockhead as he was!) through many a fireless winter's night at another ponderous block of literature—a second epic poem.

Rough-hewn, thus, in winter, he had carved on it, in spring, new forms of his creative imagination; summer had been employed on their adornment, and with the summer's last roses he had bestowed the last flowery touches on his darling work.

It was the afternoon of a sultry first of August; "magazine day" just over, the hireling had got a respite from his daily drudgery. He had employed it on the favourite labour of his brain; but that was ended, his epic was actually completed, even

to the last word of the last line of the last fair copy, which was about to be exchanged for notes and notice.

The poet wiped his pen with an air of complacency, then wiped his thin face, threw himself back in his rush-bottomed chair, and with half-closed eyes still bent upon his manuscript, his bulky embodiment of thought, indulged in a delicious reverie. Few sounds from the world without ever reached the back garret of No. 2, — Court, but from the little world within itself, frequent voices and rumblings from below often reminded the dweller on its upper surface, of vital agencies at work beneath him. Yet on this blessed day of August, “every sound was at rest,” the dancing master and his class had made a party to practice the polka on the deck of a Richmond steamer, the tailor had also been tempted to seek the water, and his journeymen, taking advantage of his absence, had given the goose a holiday on dry land. For once, all conspired to encourage the poet’s day-dream, when it was suddenly broken by the unlooked-for entrance of—his tea. In general, our son of the Muses was compelled to descend, himself, from his high Parnassus to the lower regions, and invoke the stern Proserpine there presiding for his share of the boiling Phlegethon, but this day it so happened, that in the absence of its betters, the garret was remembered, and that at the moment when most it wished itself forgotten. The black kettle was placed on the red rusted hob, a quarter of a pound of salt butter, fresh from the shop, was deposited plateless (but, mind ye, not paperless) on

the table, and then the Proserpine, as if the heat had melted and softened her down into an attendant Hebe, proceeded to a corner cupboard, drew forth the tray and tea-things, placed and replaced them, as if by dint of clatter to reconcile the discordant hues of basin, cup, and saucer, and in process of time and torment set them on the table. Still she lingered, perhaps awaiting recompense of some sort, for such surprising works of supererogation. At all events the poet seemed to think so, for he drew from his pocket a shilling (we believe it was his last), and put it into the Hebe's swarthy hand. A curtsy lower than the back garret had ever witnessed, and the recipient's speedy exit were the donor's reward. Mechanically he proceeded to make his tea, in other words to set afloat a tiny raft in a tepid ocean, then resumed his position and tried also to unravel his gilded thread of thought; but alas! it had been snapped asunder by the lumbering slip-shod tread of the workaday witch, his bright visions had all faded before her evil eye, and the silence which her confounded clatter had put to flight was not to return again; for scarcely were his fretted nerves composed, and the creaking stair relieved from her heavy tread, when from some point unseen arose the voice of an abominable Fly. Buz—buz—buz—louder than buz was ever heard before. The poet looked towards the small window of his sky-parlour which, libelling the term, admitted, from where he sat, only a view of sun-baked roofs, surmounted by the broad side of a lofty stack of chimneys, and though wide open, scarcely a mouthful of the

heated air, which air "was none." But no Fly was there, bouncing against the dim green glass, too dim and dusty to be mistaken, even by a Fly, for the thin pure ether. H—then rose and examined the dark corners of the room with its cobweb hangings, lest perchance some hapless prisoner might be detained therein; but no, an attenuated spider, her body wasted, like his own, by useless toils, was their only living occupant. Yet, "buz! buz! buz!"—resounded even louder, shriller than before. "Confound it!" cried the bewildered poet, and then rushed desperately to the corner cupboard, the sole lurking place left unexplored. But what had Flies to do with empty cupboards—with poet's larders? "Buz! buz! buz!" again rose, as if in mockery at the very thought. He returned hopeless to his chair: perhaps it was fancy after all, but whether bred of fancy or of Fly, the sound had sufficed wholly to demolish the luminous web of thought, whose first threads had been broken by the untimely entrance of his tea. To his tea therefore he applied himself, in hopes, perhaps, that it might recompose, if it failed to re-exhilarate. The tea or the tea-pot did certainly inspire one thought,—perhaps that tormenting "buz" had been only the concluding stanza of the kettle's song. Absurd idea! the more so in that the kettle had never sung at all; it seldom sings in lodging-houses, and on garret floors it has no heart to sing. The tea even, flat and vapid as his mind, might have told him so, and presently the Fly's voice, seemingly silenced, rose louder still, closer than ever, to

repeat “buz! buz! buz!” that a Fly and nothing else was at the bottom of the mystery. Though in its monotony the very same, yet did that last buz sound in the poet’s ear as something different to all those that had gone before: they had annoyed, provoked, angered him, but now the uplifting of that hidden voice absolutely frightened him. To his prostrate spirits just toppled from their unaccustomed height, it almost sounded ominous of ill. That buz! buz! buz! was like the “woe! woe! woe!” denounced in her day of doom against the proud Jerusalem,—not prouder in stately dome and lofty tower, than, of late, his air-built castles. A feeling of sickness came over him, not entirely either from fear of Fly or fear of Fate, but from nothing having passed his lips since the hour of his scanty breakfast even to the present of seven, post meridiem, of the first of August.

The Faster (fancy fed) seemed at last reminded of this fact, and betook himself, with what appetite he might, to his rigid loaf, his melting butter. He cuts a slice, he proceeds, (hear it, Apollo!) with fingers that have touched thy sacred lyre, to unfold the printed leaf wherein the dissolving condiment lay curtained. But not alone lay that butter in its melting luxury; a ravisher, detained in soft imprisonment, had been feasting on its charms, and now, out he bounces with a buz indeed, and buz! buz!! buz!!! re-echoes round, as a burly Blue-bottle, tipsy with love and jollity, mad at escape from thralldom, or merry at discovery, bangs up and bounces again and again against the unopened, because unopening, half of the garret casement.

The mystery is out ; yet the Poet stands aghast, fixed as in a stupor of horror and dismay. He scarcely notices the escaped offender ; the buz of Blue-bottle now falls unheeded on his ear ; the bouncings of Blue-bottle attract not his eye, for his eye is strained on more appalling objects,—on the printed envelope of rancid butter,—on the title-page of his first independent and avowed production,—on his own dishonoured name conspicuous in the transparency of grease ! This, then, was the publicity acquired by his first great work, and there, torn from its very self, was the sibylline leaf, which had told in the warning buz of that prophetic Fly, the coming fate of his second, his still greater work, so laboured, so exquisitely finished. Finished ! it is finished, indeed, with hope, with effort ! So spoke more plainly than could words the deep drawn sigh with which poor H—— resumed his seat, not, we may be sure, to taste his ill-savoured bread and butter, but only to sip his cold tea, as if to swallow down with it something of chagrin, or to sip in something of consolation.

* * * * *

It was growing dusk, the time of day when poor H—— was accustomed, whenever he stole an hour from his toil, to stroll countrywards, in the direction of green fields, which, as they grew more and more remote, he rarely enough contrived to reach. But this evening he had no heart to leave his garret, and not a breath of air came over the heated house-tops to

tempt him forth. The atmosphere sultry, heavy, motionless, seemed to press with equal weight upon mind and body. Silence still reigned within the house, a silence palpable, painful, almost fearful, to the sensation of the excited and exhausted Poet, as he sat nerve-bound to his chair; could he have risen, he would have almost started at the creaking of the crazy floor under his own tread; yet he would have given worlds for a sound to indicate any other living presence, besides his own. The scrape of the second-floor fiddle would, for once, have been sweet music in his ear; the kitchen Proserpine's ascent with his candle from the shades below would have been hailed as the presence of an Angel of Light; nay, the hateful buz of that detested Fly, would now, but for its spectral association with a deed of murder (for he had tipped it in a fit of passion off the brink of the milk-pot), have sounded cheerily welcome. But the dead stillness remained unbroken, and as if its own pressure, combined with the burthen of the sultry atmosphere, were not sufficient to crush the Poet's lately soaring spirit, his nerves now conjured up another incubus of oppression palpable to sight, as were the others to ear and feeling. With the sensations of weight overpowering, stillness appalling, arose a fanciful augmentation of bulk, investing with magnitude miraculous each dimly discerned object which lay on the deal table between his eye and the window. The completed manuscript (in reality thick enough!) seemed swelled into a ponderous tome whose very bulk appeared to

shadow forth its downfall from inherent gravity. The fragment of Cork butter seemed augmented to a mountain, from whence streams were slowly trickling on the dishonoured page,—that page, now an enormous grease-illuminated scroll, printed in gigantic characters which all who ran might read. And in proportion to the fly-leaf, the Fly itself floated a swollen corpse in a cup large enough to drown its destroyer. And see, swollen as he is and hideous, that monster Fly is coming back to life! He struggles to the edge of the lacteal flood, lifts above it his large hairy head, made up of dull red eyes, stretches forth his elephantine trunk, growing long, and long, and longer, raises his thin black arms and stands a giant on the edge of the milky pool. Then flapping the drops in a shower from his dripping pinions, he raises a buz—deep, deafening as of a thousand buzzes all in one, and darting forward, pounces right upon the Poet's heaving heart.

* * * * *

One day, towards the end of the same August, whose first was made, as we have just commemorated, a big black-letter day in our Poet's calendar, he was called on, in the midst of his heaviness, to furnish something light, just to puff out what would else have been a slender number of the Milliner's Magazine. In the same parlour, under much such a heavy sky, before him the same sorry equipage for tea, beside him a like bit of melting butter, nothing would have been wanted, but

the Fly defunct, the fly-leaf burned, the manuscript burned too, to bring back to its author's mind, had it been ever absent, that notable era when his second grand Epic was completed. There he sat, like the distressed Poet of the "Moral Painter,"—like him might have "plunged for his thought," and like him have "found no bottom there," only that to save diving, he seized the lightsome object brought vividly to remembrance, with all its heavy associations, by the scene, the hour, and the weather. In short, he caught again that villain Fly, and committed him, in the following strain, once more to paper :—

THE FLY AND THE POET.

Dark were the cares of the Poet's breast,
 Grand were the thoughts of his head,
 But sad thoughts and grand ones must all be repress,
 For he had to write nonsense for bread.

Proud was the curl on the Poet's lip,
 And big was the tear in his eye;
 Scarce he saw in the inkstand his pen to dip,
 But he saw on its summit a Fly.

There Blue-bottle sat, and stroked down his face,
 With a twirl of his head, twice or thrice,
 Then says he, "Brother bard—I pity your case
 "And have brought you a bit of advice.

"Nay, man, never wince! I heed not your scorn,
 "'Tis a fact, and I'll presently show it,
 "That if not, as you think yourself, Poet born,
 "I'm by place and by feeding a Poet.

" I come from a spot where the fruit of the vine,
 " And the oil of the olive abound ;
 " Where Arabia and India their riches combine,
 " And shed spiciest of odours around.

 " High over blue mountains with snowy white tips,
 " I wander ——, but use your own eyes,
 " Only look round the shop where you go for your dips,
 " And you'll see the Parnassus of Flies.

 " And now for my council—thus rich the domain,
 " Whence I draw inspiration and bread ;
 " But by lightness, not weight, I this empire maintain,
 " And by emptiness stand on my head.

 " While others can't climb, using infinite pains,
 " I, gravity turning to jest,
 " Ascend, with all ease, perpendicular planes,
 " Rough or smooth, just as pleases me best.
 " So try *lightness*, friend Poet—I warrant you'll find
 " That as I rule matter, so you may rule mind ! "



" *Lightness*, friend Poet "



THE GNAT.--A LIFE OF BUOYANCY.

"En toutes saisons, danser c'est ma vie."

THERE are certain temperaments which, hard as iron, are only acted on precisely like that sturdy metal by atmospheric changes. In dull, damp weather they gather an additional coat of rustiness or crustiness, while the finest and driest fails to produce any visible effect upon their aspect or temper. When, however, one grain of mental mercury enters into their compound, our spirits cannot choose but rise at the exhilarating influence of a bright winter's morning. Besides the effects, merely physical, of a clear bracing frost, the sunshine

of January, if it warms us less, cheers us more than the sunshine of June, through the force of contrast—contrast with the gloom which has gone before, and is sure to come after—contrast with the dark wintry objects on which it shines; and perhaps, more than all, contrast with that peculiar stillness which usually attends fair weather at this season, a stillness perceptible both to eye and ear, and produced, partly by the quiet of the tuneful groves, but quite as much by the absence of those Insect myriads which animate the summer beam. This very stillness is exciting, because (our ideas of light and life being always associate) it seems, on a bright day, strange and almost unnatural. Through a silent sunshine of this description, we repaired yesterday morning to an oak wood, which is one of our favourite places of resort and research. This wood, till lately, was a sylvan assemblage of most ancient standing, but is now composed almost wholly of comparative upstarts, exulting in their vigorous life over the truncated stumps below them. But even these, the monuments of fallen greatness, substantial in decay, stood not a whit more motionless than the slenderest sapling of the living generation, not a breath being abroad to wave their tops or to stir the brown leaves which had held on, laughing at autumn gales and wintry blasts. A sprinkle of snow, crisp and glittering, slightly veiled the wood tracks, and as we trod them “we heard not a sound,” but the brittle gems breaking on the spangled pathway. This was exactly the stillness we have just been noting

as an addition (usually) to the effect or mute *expression* of old winter's face, when he treats us to its brightest side; but somehow or another we felt it, on the present occasion, more as a feature wanting. Our spirits were so light, our blood danced so briskly, our heart glowed, like our feet, so warmly, and rose so thankfully to the Great Source of all things calm and bright and beautiful, that we longed for something animate to join us in our homage of enjoyment. The wish was hardly conceived ere it was accomplished, for on passing beneath a canopy of low interlacing branches, we suddenly found ourselves making one with a company of Gnats, dancing (though more mutely) quite as merrily as they could possibly have footed it on the balmy air of a summer's eve. Their appearance was welcome to our eyes, not as flowers in *May*, but as flowers in *January*, and so we sat down on one of the oaken stumps hard by, to watch their evolutions. Mazy and intricate enough, in sooth, they seemed, yet these light-winged figurantes, little as one might think it, would seem to have "measure in their mirth," aye, and mathematics too; for it is stated as a fact,* that no three of these dancers can so place themselves that lines joining their point of position shall form either more or less than two right angles. The "set" upon which we had intruded, was an assemblage of those Tipulidan or long-legged Gnats which have been named *Tell-tales*, we suppose, because by their presence in winter, they seem to tell

* In Darley's Geometrical Companion.

a tale of early spring, belied by the bitter east, which often tells us another story when we turn from their sheltered saloon of assembly. In this sense, however, these are not the only Tell-tales of their kind, for quite as common, at the same season, are some other parties of aërial dancers, one of which we fell in with soon after we had taken leave of the first. These were tiny sylphs with black bodies and wings of snow-white gauze, and like "choice spirits, black, white, and grey," (for they wore plumes of the latter colour,) they were greeting the still New Year with mirth and revelry, and that over a frozen pool, whose icy presence one would have fancied quite enough for their instant annihilation. But though (warmed by exercise) these merry mates care so little for the cold without, they are glad enough, when occasion serves, to profit by the shelter of our windows. In ours we often watch them, and you, good reader, had better seek for them, unless you would miss the sight of as pretty and elegant a little creature as any one could desire to look at on a fine summer's, much more a winter's, day. We have spoken of the *plumes* of these winged revellers, black, white, and grey, which dance in the air as merrily as the Quaker's wife in the song; but here be it observed, that our Gnats' wives, with real quaker-like sobriety, rarely, if ever, dance at all, and never by any accident wear feathers. They may do worse, as we shall perhaps discover by-and-by, but as for plumes (in poetic parlance "feathered antlers," in scientific "*pectinate antennæ*,") these are decora-

tions of vanity, exclusively confined among all Gnats to the masculine gender. Gnats' balls, therefore, contrary to usual custom, are made up of beaux.

“'Tis merry in the hall when beards wag all,”

says a morose proverb, steeped in the boozing barbarism of days gone by, and these ungallant Flies would seem, still, to think it merry in the air when their dames are not there.

Apropos of dancing, we may here mention one peculiar mode of Gnat practice, which came the other day under our observation. It may have been remarked before, or it may not, at all events our note is in season and will serve, if for nothing else, to illustrate the assertion that a habit of noticing Insect movements may often amuse a stray minute which might otherwise be wholly lost in vacancy. Well, one of these sportive gentry having made itself free of our parlour, presently deserted the window and came to suspend itself in air directly over the cage of our favourite canary, which was placed on a table near the fire. Here, with incredible activity and perseverance, the Insect kept up its “*pas d' extase*,” alternately rising and falling for more than half an hour without intermission, never deviating from its position over the little musician's head, but evidently coming lower so as almost to touch the top of the cage whenever the bird renewed its occasionally broken song. The attraction of the latter was unquestionable—its cause dubious, also, whether of an individual or general character. If general, may it not be that by

a sort of pleasure derived from the notes or other alluring influence exercised by singing-birds, these Gnats, by nature the prey of so many, are attracted to approach and hover within reach of their syren enemies.

“When the sun shines, let foolish Gnats make sport,
But creep in crannies when he hides his beams;”

now this is an allusion in which our Bard of Avon fails to display his usual most accurate observation of natural objects. Though courting the winter gleam, every body can tell that Gnats by no means hide their heads with the summer sun, for they seem to rejoice at his setting as much as at his rising, in his absence as well as in his presence. In short at every hour, as at every season, “*Dansez toujours*” seems their motto; up and down, in and out and round about, in the morning, noon, and evening of our day, as in the morning, noon, and evening of their own existence.

But stay! here we are arrived at the end of our dance, nay, at the end of our dancers’ lives, without having said a word about their beginning. Well, we have nothing for it but to go backwards, jumping over the steps already made, up to the *premier pas*, our aërial performer’s birth and parentage. Even this, though, will hardly do, since for the sake of the uninformed, it may be well to preface our memoir by a word or two on the subject of Insect Transformation. Everybody, we conclude, has a general notion concerning the passage of a Butterfly through the successive stages of caterpillar, chrysalis,

and winged flutterer. Then, only let it be borne in mind that all perfect Insects have passed through three states, corresponding, though not similar, which are yecept by Entomologists those of Larva, Pupa, and Imago.

Now for the beginning of the Gnat's life of Buoyancy, which commences on the water. Man has been believed by the nations of antiquity to have

“ Learned of the little Nautilus to sail,
Spread the thin oar, and catch the rising gale ;”

but he might also have taken a first lesson in boat-building from an object common in almost every pond, though, certainly, not so likely to attract attention as the sailing craft of that bold mariner, the little Argonaut. This object is a boat of eggs, not a boat egg-laden ; nor yet that witch's transport, an egg-shell boat, but a buoyant life-boat, curiously constructed of her own eggs by the common Gnat. How she begins and completes her work may be seen by any one curious enough and wakeful enough to repair by five or six in the morning to a pond or bucket of water frequented by Gnats, and those who would rather see through other eyes than their own, especially when, perhaps, half open, may read in the pages of Réaumur* or Rennie† full descriptions of this mother boat-builder's clever operations. The boat itself, with all we are going to describe, and all we have depicted (from the life), may be seen, at home and at all hours, within the convenient

* Mémoires pour servir à l'histoire des Insectes.

† Insect Transformations.

compass of a basin filled from an adjacent pond. When complete, the boat consists of from 250 to 350 eggs, of which, though each is heavy enough to sink in water, the whole compose a structure perfectly buoyant, so buoyant as to float amidst the most violent agitation. What is yet more wonderful, though hollow, it never fills with water, and even if we push it to the bottom of our mimic pool, it will rise unwetted to the surface. This cunning craft has been likened to a London wherry, being sharp and high fore and aft, convex below, concave above, and always floating on its keel. In a few days each of the numerous "lives" within having put on the shape of a grub or *Larva*, issues from the lower end of its own flask-shaped egg, but the empty shells continuing still attached, the boat remains a boat till reduced by weather to a wreck.

Here let us leave it, and follow the fortunes of one of the crew after he has left his cabin, which he quits in rather a singular manner, emerging through its bottom into the water. Happily, however, he is born a swimmer and can take his pleasure in his native element, poising himself near its surface head downwards, tail upwards. Why chooses he this strange position? Just for the same reason that we rather prefer, when taking a dabble in the waves, to have our heads above water, for the convenience, namely, of receiving a due supply of air, which the little swimmer in question sucks in through a sort of tube in his tail. This breathing apparatus, as well as the tail itself, serves also for a buoy, and both end in a sort of funnel, com-

posed of hairs arranged in a star-like form and anointed with an oil by which they repel water. When tired of suspension near the surface, our little swimmer has only to fold up these divergent hairs, and plump, he sinks down to the bottom. He goes, however, provided with the means of re-ascension, a globule of air which the oil enables him to retain at his funnel's ends; on re-opening which he again rises whenever the fancy takes him. But yet a little while, and a new era arrives in the existence of this buoyant creature: buoyant in his first stage of *Larva*, in his second of *Pupa* he is buoyant still. Yet, in resemblance, how unlike! But lately topsy-turvy, his altered body first assumes what we should call its natural position, and he swims, head upwards, because within it there is now contained a different, but equally curious apparatus for inhaling the atmospheric fluid. Seated behind his head, arises a pair of respirators, not very much unlike the aural appendages of an ass, to which they have been compared; and through these he feeds on air, requiring now no grosser aliment. At his nether extremity there expands a fish-like finny tail by help of which he can either float or strike at pleasure through the water.

Thus passes with our buoyant Pupa the space of about a week; and then another and a more important change comes "o'er the spirit of his dream." With the gradual development of superior organs, the little spark of sensitivity within seems wakened to a new desire to rise upwards. Fed for a season upon

air, the insect's desires seem to have grown ærian. While a noon-day sun is warm upon the water (as yet his native element), he rises to the surface and above it, elevating both head and shoulders, as if gasping for the new enjoyments which await him. His breast swells (as it were) with the sweet anticipation, his confining corslet bursts, and the head, not that which has played its part on the stage of being now about to close, but another, all plumed and decorated for a more brilliant theatre, emerges through the rent, followed by the shoulders and the filmy wings which are to play upon the air. ——— But have a care, my little *débutant*! thou art yet upon the water; an unlucky somerset would wet thy still soft and drooping pinions, and render them unfit for flight.—Now is thy critical moment—hold thee steady—lose not thy perpendicular, or———But why fear we for the little mariner? He who clothes the lily and feeds the sparrow, has provided him support in this, his point of peril. The stiff covering of his recent form, from which he is struggling to escape, now serves him as a life-boat—the second to which he will owe his safety. His upright body forms its mast as well as sail, and in the breeze now rippling the water, he is wafted rapidly along. He will assuredly be capsized from press of sail. But see, he has acquired by this time other helps to aid his self-preserving efforts. His slender legs (hitherto hung pendant) now feel for and find the surface of the pool. His boat is left behind and, still endowed with one aquatic power, he stands a

moment on the water, then rises, buoyant, a winged inhabitant of air !

So now we have brought our bold sailor into port, and re-transformed him into a bolder aëronaut. His performances in the latter character, as a dancer, we have extolled already ; but others of a graver nature for which he has the discredit, still remain for notice. Yet think not, gentle ladies, that our plumed Gnat gallant, (albeit so ungallant to his own fair one,) ever settles on a sunny cheek, or ever enters at door or window with blood-thirsty intent. Spare him, therefore, if not "*pour l'amour de ses beaux plumes*," at least for the sake of the innocence they denote. Let him finish his reel or his horn-pipe unmolested, and reserve your vengeance for his shrewish partner, on whose plumeless head it will more justly fall. Have we not already hinted that though she seldom dances, and never wears feathers, she has practices something worse, and *she* it is, who while her spouse regales himself on nectar quaffed from flowers, or perhaps even is satisfied with a chameleon banquet—*she* it is, who longs for the "red wine," each drop of which she repays with poison. *Her's* are the "barbed shaft," the "whirring wings," the "dragon scales" against which you must invoke the protection of your "guardian sylph" or your pocket handkerchief. But even in their fiercest shape, or in that most formidable, a mingled swarm, in which the guilty and the guiltless in their company, must (as in other cases) alike bear the buffet, we are seldom ourselves

inclined to visit Gnat offenders very roughly. Even at the risk of being taken for cousins once removed of the old lady, whose partiality for Fleas stands recorded, we must confess to a sneaking kindness for Gnats, be they plumed or plumeless, honey-sippers or blood-suckers. Not only at this season, but always, we love their shrilly hum, because it comes associate, if with one painful, with many pleasant experiences and pleasant memories; such as of summer sun-sets, warm window-seats, and above all, of such bright winter noon-days as that on which we yesterday attended their assembly beneath the "brown wood tree." But, of course, we can plead only for the Gnats of England (not even for these in her countries of morass and fen), and only with England's stay at home daughters. As for those, who in colonial climates seek matrimony and find Mosquitos, who could attempt to propitiate their wounded sensibilities? There, where tropic suns soften the heart of man, and woman loves to stamp her image on its wax-like impressibility, to retire to sleep a Venus and wake a Medusa, a foul thing of bumps and blotches,—who can wonder, that under such a visitation the gentlest of bosoms should swell with wrath and vengeance, and who would dare to deprecate the Nero-like desire, that Mosquitos, Gnats, in all their varieties and in all their countless myriads, possessed but one common body to be crushed to atoms beneath the sufferer's stamping foot.

The following lively lines from the pen of that poet of

Nature, the American Bryant, cannot be deemed foreign to the subject of these, his native Gnats; and they are, moreover, suggestive to the ladies, at home as well as abroad, of a new use to which they might apply the cosmetic mask of Rowland manufacture. That celebrated conservator of female charms might do well to reprint them himself, in form of an advertisement.—

TO A MOSQUITO.

Fair Insect, that, with thread-like legs spread out,
 And blood-extracting bill, and filmy wing,
 Dost murmur, as thou slowly sails't about,
 In pitiless ears, full many a plaintive thing,
 And tell how little our large veins should bleed,
 Would we but yield them to thy bitter need.

Unwillingly, I own, and what is worse,
 Full angrily, men hearken to thy plaint;
 Thou gettest many a brush and many a curse,
 For saying thou art gaunt and starved and faint:
 E'en the old beggar while he asks for food
 Would kill thee, hapless stranger, if he could.

I call thee stranger, for the Town, I ween,
 Has not the honour of so proud a birth,
 Thou com'st from Jersey meadows fresh and green
 The offspring of the Gods, tho' born on earth;
 For Titan was thy sire, and fair was she,
 The Ocean Nymph that nursed thy infancy.

Beneath the rushes was thy cradle swung,
 And when, at length, thy gauzy wings grew strong,
 Abroad, to gentle airs their folds were flung,
 Rose in the sky, and bore thee soft along:

The South wind breathed to waft thee on thy way,
And danced and shone beneath the billowy bay.

And calm, afar, the city spires arose,
Thence didst thou hear the distant hum of men,
And as its grateful odours met thy nose,
Didst seem to smell thy native marsh again,
Fair lay its crowded streets, and at the sight,
Thy tiny song grew shriller with delight.

At length, thy pinions fluttered in Broadway,
Ah! there were fairy steps, and white necks, kissed
By wanton airs, and eyes whose killing ray
Shone through the snowy veils, like stars thro' mist,
And fresh as morn, on many a cheek and chin,
Bloom'd the bright blood thro' the transparent skin.

Oh! these were sights to touch an anchorite!
What! do I hear thy slender voice complain?
Thou wailest, when I talk of Beauty's light,
As if it brought the memory of pain.
Thou art a way-ward being: well, come near,
And pour thy tale of sorrow in my ear.

What sayest thou, slanderer? rouge makes thee sick?
And "China Bloom" at best, is sorry food?
And "Rowland's Kalydor," if laid on thick,
Poisons the thirsty wretch that bores for blood!
Go—'t was a just reward that met thy crime.
But shun the sacrilege another time.

That bloom was made to look at, not to touch;
To worship, not approach, that radiant white;
And well might sudden vengeance light on such,
As dared, like thee, most impiously to bite:—
Thou should'st have gazed at distance and admired,
Murmured thy adoration and retired.

We have spoken of Gnats and Mosquitos almost as one, because to ordinary observers there is very little exterior difference between them, though as naturalists have reckoned near thirty species of the *Culex* or Gnat family in Britain alone, the pest of the Tropics and the Poles is no doubt a variety. And, verily, if these perpetual plagues in the air were the sole evils attendant on fierce extremes of climate, we should have ample cause to “bless our stars” or rather bless our sun in whose tempered beams our Mosquitos are but as harmless motes compared with sparks of living fire.—Sparks of fire! what say we? Sparks of fire, nay, showers of fire-balls could shew respect to the Great Washington’s boots, yet are we told that the General of freedom was pierced through his calf’s skin, even to his calves, by tyrant Mosquitos; and that Italian blood-suckers of the shores of the Po, “great and terrible” as their western brethren, can also plunge their stiletos through a shield of leather, backed by a defence of triple hose. Well might legionary demons, armed like these, have routed a Persian army; well might lions flee before them; well might they bequeath their conquering name “Mosquito” to country, bay, and town in that quarter of the globe, where chiefly they usurp dominion; and in another, Pole-wards, well may the Lapland peasant encase himself in a cloud of smoke, and the Crimean soldier in his sack, as a protection from envenomed weapons, thick as descending snow-flakes, and keen as the cutting frost of their native winters. These polar demons seem

endued, too, with almost demoniac vitality, for northern travellers record, how that when frozen into black masses resembling peat, they have been thawed into a living cloud.

It is really pleasant to turn from these foreign flagellators of humanity (here only noticed for the sake of contrast) to our gentler sporters in the sun and shade, with a few of whose varieties and vagaries we shall bid them, for the present farewell. All those who are accustomed to make their ablutions in soft water, have probably noticed at the bottom of their ewers, an assemblage of dirt-coloured fuzzy streaks, which on narrowly watching, they would find to be endued with the power of locomotion. Each of these objects, as it meets the sight, is nothing but a case of dusty particles collected around it by a little living occupant, which on account of its colour, has acquired the sanguinary name of Blood-worm. An eye unacquainted with this unpromising object, would as little expect to behold evolved from it a creature of grace and beauty, as to see a rose expand from the stalk of a nettle ; yet after passing through the intermediate stage of *Pupa*, (in which its breathing organs are no less curiously adapted than those of the common species,) this little worm emerges from the water in the shape of a small Gnat, whose elegant plumes, surpassing those of its fellows, have acquired for it the accordant appellation of *Chironimus plumosus*. Some varieties of this pretty Fly waltz upon the water or glide over its surface like the stately swan, their wings, as with the bird, serving them for the purpose of a sail.

All Gnats, however, are not aquatic in their birth and early stages ; one little orange-coloured species, instead of awaking into life surrounded by a liquid expanse, finds itself within the narrow bounds of a single wheat blossom, the pollen of which (thanks to a careful mother) provides for all its infant necessities. Mighty in their multitude, a swarm of tiny feeders such as these is said sometimes to destroy a crop of wheat.

Such, or in shapes but slightly varied, is the Gnat's existence ; generally, throughout its stages, always, in its perfect form, one of cheerful buoyancy. We might do worse than take pattern by its character. To joy in every season of our lives in sunshine and in shade, to let the drops of affliction glide from off our elastic spirits, as the falling rain-drops glide from off the oily wings and agile bodies of the shower-heedless insect,—this were indeed no bad philosophy, but is it practised ? rarely enough, we fancy, and (with a sigh) have reason to admit. Is it practicable ? to a great extent we believe it is, either through the lightness of animal spirits ; or (much better) through the resisting power of the moral-machinery within us, when obedient to that grand moving wheel, which the holy oil of divine aid and divine blessing ever keeps in play.

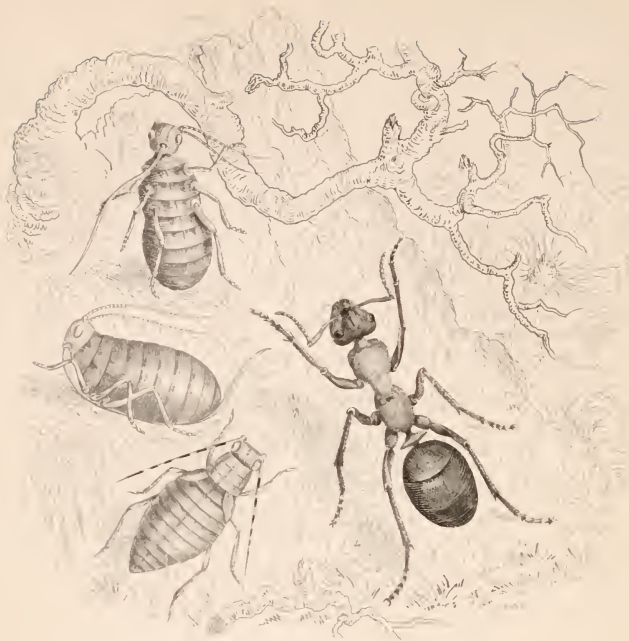
Looking into real life for an instance of a buoyant nature, the season helps to remind us (would we could quote him as a living example !) of Thomas Hood, that mirthful son of genius, who under failing health and great cause for depressing care, could yet be harmlessly jocund all the year round, while he

provided for so many of us (now his mourners) a rich banquet of animal mirth. A German philosopher has said, that "happiness and misfortune stand in continual balance." This is a cheering reflection, and more, it is a *fact*, continually brought home to our individual experience by the re-action of mental depression and the lively inspirations of hope.

Let us then, with our Insect model, strive to keep up our buoyancy; but let us beware of confounding levity with elasticity, of mistaking the glare of worldly pleasure for the sunshine of a cheerful heart. Herein also does our little winged philosopher furnish us with a warning as well as an example. He takes delight in his native atmosphere, in sunshine or in rain; he is neither drowned by the one, nor scorched by the other. But how often when he enters the precincts of artificial life, is he tempted to approach the alluring taper, until, drawn within its fiery vortex, his little life of buoyancy is on a sudden changed to one of torture.



Let us then strive to keep up our buoyancy.



THE WOOD-ANT AND THE APHIDES.

"Povert a spectacle is, as thinketh me,
Through which he may his very Frendis see."—*Chaucer.*

IN the midst of an oak wood stands a village or scattered group of rustic habitations. These are curiously excavated in the earth, above which rise their dome-like roofs, thatched in a peculiar manner, with pieces of stick and straw, and each is the common abode of a large community of various ranks and orders. In one of these sylvan dwellings there lived, and perhaps lives still, a good sort of body, a female member of the working class, who set a perfect pattern of industry; though (to do them justice) all her neighbours and fellow-

lodgers, those at least of the same rank, were shaped in like fashion and out of the same useful stuff as herself. She was not only indefatigable in the feminine cares of nursing and attendance on the young and weakly, but was also an adept in various toilsome occupations, such as building, digging, and foraging—labours always performed by herself and sisterhood, after the custom of some remote countries, called barbarous, as well as (more or less) of certain others much nearer home, which are mis-called civilized. To all her laudable activity it might have been naturally expected, that our useful busy-body would have added a portion of such prudent fore-thought, as would have secured to herself a certain provision against the approach of winter, a season which interrupted her labours, and nearly cut off her supplies; but no such thing: the most heedless lover of pleasure that ever tripped it in a ball-room, or fluttered from flower to flower, could not possibly have taken less “thought for the morrow” than our toiling villager. Often at work, not only from morn till eve, but from eve till dewy morn, she had turned, as it were, the summer into one long day, and seemed to think that she had thereby acquired a title to convert the winter, or as much of it as she chose, into one long night. At all events, both she and her fellow-labourers had earned the right (of which they were never defrauded) of being as warmly lodged, during the inclement season, as their betters,—those at least, for whom they had been toiling, and whose habitation they shared as well as built. Accordingly, when December

arrived, and with it a frost of intense severity, our busy-body shut herself up in her warm underground quarters, and having, no doubt, taken first a complacent review of her well-spent summer day, fell into a comfortable dose and from thence into a slumber, profound as that fabled of the Seven Sleepers. So deep and long her nap, that the merry Christmas bells did not wake her, nor yet the shouts of merrier children, when they came trampling and jumping over head to gather the scarlet holly berries which abound near her habitation. On went the frost, and with it on went the good house-wife's comfortable snooze; but one day the sharp north-east having whistled his own lullaby, his brother, the soft south-west, arose to do duty in his stead. The sun, at the same time, drew aside his fog curtain, and shone out so bright and warm, as to penetrate even to our sleeper's underground chamber. She felt its reviving power, and with a yawn and a stretch (which if commensurate with the duration of her slumbers must have been of tremendous length) she rubbed her eyes and awoke. Like the sluggard, however, (though sluggard she was none,) she turned and tried to sleep again; but it would not do: certain uneasy sensations, not very difficult to account for after a six weeks' abstinence, soon drove away all her drowsiness. She would certainly have arisen and have gone to her cupboard, only that with her, the comforts and consolations of a corner cupboard were mysteries unknown. Nevertheless, awake up she did, and looked round upon her friends,—the companions

of her slumber, but not, as yet, of her wakefulness ; and she was too kind to rouse them, knowing she should thereby only bring them into the same strait of hunger as herself. How to get out of it she hardly knew, but instead of sitting or lying down again to consider, she stepped up to the entrance of her dwelling, or, we should rather say, one of them, since it had almost as many as the far-famed residence of John o' Groat. These, however, had been (according to custom) all carefully barred up on the setting in of the frost, so that, all alone, she had to take down one of the barricades she had assisted to erect ; and this done, though not without some effort, she was able to take a peep at the outward world, from which she had been so long retired. And a beautiful world it was, all dressed in white and begemmed with diamonds sparkling in the noon-day sun, as they fell from the boughs faster than leaves in autumn. Strange as it may seem, our sleeper awakened had never in all her life seen it so dressed out before, and if she had not been rather cold and very hungry, she might, perhaps, have stood lost in admiration at the fine "dissolving views" around her—yet perhaps not either, for she had always a better eye for business than for the picturesque. Besides, she had been thinking of what to do, and in so doing had be-thought her of a certain large family, with whom her own had long been upon the most intimate and social footing, and by whom, indeed, both herself and friends, had often been regaled, even when they had gone in a large party to claim hospitality.

It would have seemed hard, indeed, had such hospitality been ever grudged by these, their neighbours, to one or any among the inhabitants of our village in the wood; for often under their straw-thatched roofs, had the children of the former been tenderly fostered even from their birth,—a kind office in which you may be sure our good little body had not been backward to assist. Some folks, however, are always groping for the worm of selfishness at the roots of all good actions, except their own, and these whispered with delight that it was not for nothing that our busy people occupied themselves with other people's children. Be this as it may, our sleeper awakened resolved, in her hour of need, to ask the assistance of those who certainly, on the face of the matter, owed some obligations to her and hers; but the question now was, how to reach their abode, which was seated under the protection of an old oak pollard at some distance from her own. In summer, nothing could be easier, and, novice as she was in winter travelling, she thought, poor little soul! deceived by appearances, that she should find it mighty pleasant and clean walking over the snow. And so a few hours before, she might, for she was always a very lightsome body, and after a six week's nap, she had not, as we may readily suppose, an atom of heaviness remaining; but now the snow being half melted by the sun, she sank and floundered at every step, besides being ever and anon nearly swept away by tremendous avalanches falling from the laden boughs over head. Pushed on,

however, by hunger and her own determined spirit, and assisted by that Kind Power which, as shewn both in the Fable book and the book of Life, seldom fails to help those who are inclined to help themselves, she arrived at length within sight of the desired oak tree. A few minutes more brought her under its boughs, and into the very midst of the family she had come to visit. Like her, they had all been brought out by the sunshine, and like her had all been sleeping through the frost, a habit in which they exactly resembled our busy friend and her fellows; but here all likeness ended, the people of the oak being as lazy a crew as ever slept or ate away existence. They were, in short, of the number of those spoilt children of mother earth (of all the least enviable), on whom she lavishes her gifts without requiring any labour in return; for these idlers, wherever their abode, always found themselves in the midst of plenty. Idlers as they were, yet after their late long fast you may be sure they were all busy enough in breaking it; and as their famishing visitor drew near, her hungry eyes were not slow in discerning that young and old, big and little, were hard at work, not with their knives and forks, but with their pipes, which, both their food and their manner of eating it being, like those of the Chinese, rather peculiar, served them instead of either. Not one of the party took the slightest notice of the pitiful presence of our poor dripping wearied traveller, as she stood at an humble distance, and looked round timidly before she ventured, except by looks,

to make known her wants. She first tried to recognise among the younger of the party some who might have been her foster-children; but they were all grown out of knowledge,—at all events seemed to have no knowledge of her. From the juveniles she then turned to one who, judging by appearance, might have been “le Père de la Famille;” brown-coated, round, sleek and shining, he had been busiest of the busy with his pipe, which, by the way, was much longer and, as his petitioner soon found, much more pliant than himself. Fairly tired out with its use, he had laid this curious instrument of repletion, not aside, for he was too much attached to it, but out of the way, and now depending from his chin and bent over his portly stomach, it passed between his legs, and turned up like a tail behind. Well, this was the one-tailed Bashaw whom our hungry suppliant at length ventured to accost, though why in preference to others we cannot say, unless it might have been from the unoccupied consequence of his air. She related her pressing need, a tale which her gaunt figure and famished looks told for her over again; but twice told, or told a hundred times, it fell, as is usual with tales of like burthen, upon a heedless ear. The little plump brown-coated gentleman coolly brought forward his pipe, and under the starveling’s very nose began again, not, I promise you, to puff out mere whiffs of smoke, but to draw in, after his peculiar fashion, the remainder of his unfinished and apparently interminable repast. This was very hard-hearted to be sure, but then, in his defence, be it ob-

served, that his suppliant was on her part no less thick-headed, having thought, poor silly creature ! to strengthen her claim by a delicate allusion to former kindnesses, received at her hands by certain of his kindred. For this, her folly, she was only treated as she deserved—perhaps she thought so too, for without applying to any one else of all her “many friends,” whose looks were not encouraging, she turned away, hungrier and sadder than ever, meaning to try and crawl back again to her unprovisioned home, that she might die at least among her own people. But alas ! she soon found that this backward step, hard enough to contemplate, was one yet harder to execute. While her “friends” had been busy feasting with their hollow pipes, and she with her hollow eyes, the sun had been busy with the snow, of which, by this time, he had made what to her was an impassable lake between herself and home. How wistfully did she try, but in vain, to look across it from that barbarous and inhospitable shore where she must now lie down and perish with hunger. But no ; a death more speedy soon threatened to swallow up the atom that now remained of our poor little villager’s wasted body. The great sun having stooped from his meridian height to do her all the harm he could, had now shrunk behind a dark cloudy screen, whence presently (and as if *he* was still at the bottom of the mischief) there came pouring down a tremendous torrent. The intercepting lake soon spread into a sea ; the sea soon swelled into an ocean ; and the wind, no longer a soft south-wester,

rippled it into mimic waves, with the power of which our hapless wayfarer soon found herself weakly battling. Who then would have given a straw's end for her little life? not one, I trow, of the best friends she had in all her little world. Yet a friend of the helpless, better than all, *did* provide a straw to which she was able to cling in her dire extremity. On this same straw or stick or spar, it matters not what, but on a something large enough and light enough to supply her with a raft, she floated about, now here now there, till at last she was carried,—where do you think?—back again to the foot of the old oak pollard inhabited by her fair weather friends. There the subsiding waters left her, and as soon as a little recovered, our tempest-tossed traveller looked around for some member of the inhospitable family, but they were all retired to their inner chamber, from whence she could discover nothing of their presence, except here and there a sharp little black eye, peering out at her from behind a convenient crevice. She hardly knew, indeed, why she looked after them at all; every thought of begging was at an end. All her wants, as she believed, were ended too; but feeling very cold and benumbed, she crept by a prodigious effort, which seemed her last, into a cranny near the bottom of the old pollard, which, hollow as it was, had a great deal more heart (for her) than its churlish occupants. The short winter's day was nearly at a close, and our little busy-body all her business seeming at an end, still lay within her place of refuge. Perishing with hunger, cold,

and wet, bitter seemed her end, and very bitter, one might have supposed, her thoughts against the "many friends" who with power, and close at hand, were letting her die all unheeded and alone. But, somehow, it often happens that when our troubles seem, to others, at their very sharpest, we find that, to ourselves, their edge is already blunted. So at least it was with the troubles, and with the anger too (if any she had ever felt) of our sleeper awakened. Sleep himself, that "kind restorer" from whose embraces she had broken only to encounter a world of woe, had once more lifted her into his arms, and was going to transfer her gently to those of his "brother Death." In plain parlance, she had fallen into a nap which promised to be much longer even than her last, when she was suddenly awoke by a gentle tapping on the outside of her hollow oak tree. On opening her eyes, she could just discern by the light of the setting sun, not a "Woodpecker," who would have been to her of all visitants the most unwelcome, but the young face of one belonging to the numerous family, all of whom she had reason to believe alike hard-hearted. This little creature had heard and pitied the story of her distress, when she thought she had related it to none but dull cold ears, and hers, too, were among the prying eyes which had noticed the suppliant's unpurposed return. Now that her elders were again busy with their pipes (having none other occupation), the kind-hearted soul had crept round to the hiding place of their uninvited guest, to offer her her own

supper. The poor destitute thankfully received what was so kindly proffered, and was wonderfully refreshed by the timely aid. She slept that night in the old tree, and the next day, all the water having disappeared, contrived to reach her home; but her "friend in need" had taken care to supply her before hand with a good breakfast, and would not suffer her to depart without a store of honey to refresh her on the road. The gift was not, however, applied to this purpose by our good villager. The unkindness of the many could not freeze her heart, while there was the kindness of one to keep it warm; and it was with all, and more than all her usual delight, that she imparted of her hard-won treasure to her poor fellow-labourers, whom she had never thought to see again. By the time she returned, they had nearly all awoke from their common slumber; but a few only were at home to welcome her, the rest having gone out, early, to forage for provisions, and where should they have gone, but to the oak pollard and the people of the pipes. From these, and above all from the little brown-coated gentleman, who wore his pipe *en queue*, they met with infinite civility, and with what they wanted more, a plentiful supply. After the shabby treatment of their sister in need, this might seem somewhat marvellous—but then, *she* had gone alone and as a suppliant, with nothing but past services to cover her effrontery; *they* had gone in a body, and solicited supplies in a tone authorized by numbers and by the right of custom.

So ends our tale: but we have yet to disclose the name of that industrious, good-natured, yet withal improvident and rather simple little personage whose adventure it records. There is a certain busy worker of whom it is declared, that “she provideth her meat in the summer, and gathereth her food in the harvest,” for which sagacious proceeding all teachers of morality from the wise monarch of Israel downwards, have held her up as a bright pattern of industrious forethought. Everybody knows, everybody at least supposes, that this far-seeing animal is, as represented, none other than the prudent Ant. Now *our* little worker, who, hard as she toiled in summer days, took no care for wintry morrows, displayed no forethought at all; the *provident* Ant, therefore, she could not be. In conjunction with her prudence in particular, exemplified by her supposed harvesting of a “store for future want,” the prudence in general of the above-named Insect has been no less highly lauded; but of prudence our simple villager knew nothing, nothing at least of that Image of the Virtue called after her, and set up (a cold statue) in Mammon’s temple. Her labours were all for the general profit, not for her own individual benefit; the *prudent* Ant she could never be.

It has also been observed sarcastically and with reference to the same acknowledged prudence, that

“La Fourmi n’est pas prêteuse,
C’est là son moindre défaut;”

whereas the individual of our story shewed herself something *more* than *prêteuse*, not only willing to lend her labour, but ready to impart of all she had—her little hard-won store, to her neighbours and fellow-workers. The *avaricious* Ant she could never be. An Ant, nevertheless, and nothing else, is intended to be represented by our sleeper awakened of the straw-roofed dwelling, only that her portrait is not painted after the old masters or their modern copyists, whose pictures, with the exception of one grand feature, that of industry, are totally unlike those drawn from the life by close observers. The policy of Eastern Ants may possibly reach farther than that of European, and whatever they did in the days of Solomon they certainly do still. Perhaps even, wheresoever the Ant Tribes may be scattered among the Tribes of Israel, they may have learnt from the prudent people with whom they dwell, always to forecast, and never to lend without good interest. This might furnish a point of enquiry for Physiologists of Insect Mind; but our business is with Ants in general, of whom it is commonly supposed that they have store-house and barn for winter provender, and of whom it has been further fabled, that they know how to keep their corn in due order, by cleverly biting off the germinating end. Now though they are acquainted with practices quite as cunning even as this, it would seem, after all, that the mystery of harvesting is to them unknown. Now and then indeed, we may see one of these indefatigable workers, alone or assisted by a comrade, toiling

under the prodigious burthen of a wheat or barley-corn; but this, it would appear, is employed for building rather than for food, a few scattered grains being often mingled with the bits of stick and straw used by the Wood-Ants to thatch or cover in their conical abodes. Our busy villager represents a member of one of these sylvan communities, and we have considered her of the feminine gender, not merely to compliment "the sex" on their common virtues of industry and of generous unselfish kindness, nor yet to censure them for their as common want of thought or prospective calculation; but simply, because all Ant labourers are females, though distinguished from those which become the wives and mothers of the community. "Go then to the Ant," ye spinsters! "consider her ways, and be wise." See how in her state of single blessedness, she makes herself, by active uses, one of the greatest blessings of her own society, and be the same of yours!

And now for the way in which these Ant communities pass the winter, and for the neighbours to whom they are accustomed to apply in time of need. These have been already glanced at under the guise of fable. In the plain garb of corresponding fact, let us look at them a little more closely, as their doings stand recorded in some right pleasant and veracious chronicles of the Formic Nations.* "Ants" says their historian, "usually become torpid during the intense cold, but

* Huber on Ants, p. 239.

when the season is not severe, the depth of their nest guards them from the effects of frost. They do not lose their activity unless the temperature be reduced to the 2nd degree of Réaumur below freezing point. I have occasionally seen them walking upon the snow, engaged in their customary avocations. In so reduced a temperature they would be exposed to the horrors of famine, were they not supplied with food by the Pucerons." The Pucerons, we must here observe, are none other than those little Insects (usually green) found in more or less abundance on every plant and tree, and commonly known under the misleading names of Blight and Honey Dew; they are also called *Aphides* and Plant-Lice. The entire history of these little animals is very curious, but of this in due season.* Suffice it now, that one of its most curious chapters relates to their remarkable connexion with Ants, to whom they are in the habit, when called on, of imparting refreshment in the shape of that sweet juice called Honey Dew, with which their own bodies are amply filled. Our author continues: "By an admirable concurrence of circumstances, which we cannot attribute to accident, these Insects become torpid at exactly the same degree of cold as those to which they are thus useful, and recover from this state also at the same time, so that the Ants always find them when they need them." We see from this that the absence in Ants of that faculty which would guide them to lay up a winter store, is no

* See March.

defect in their nature. The providing instinct is not bestowed, whilst a provision is given to supply its place.

When we say the providing instinct is not given, we must, however, limit the observation to the business of storing grain for winter's want. Though they do not this, they sometimes do as much or more. What say you to the habit of keeping and tending infant herds with a view to future use? At all events, through a prospective propensity which is made subservient to this end, "they will sometimes (says Huber) collect the eggs of Aphides, deposit them in their own nests, guard them with the greatest care, till evolved, and then, as we pasture milch kine, continue to keep an eye over them for the delicious nutriment they afford. Those Ants which do not know how thus to assemble them, are, at least, acquainted with their resorts. They follow them to the base of the trees and branches of the shrubs they are used to frequent, and at the beginning of frost pursue along the hedges the paths which lead to their retreat. As soon as the Ants recover from their torpor, induced by severe cold, they venture forth to procure their food. The honied aliment, thus collected and swallowed, is on their return home equally distributed among their companions." The Ant figured in our story, and prefigured in our vignette, is one of that large species before spoken of, popularly known by the different names of Pismire, Wood, Hill, and Horse Ant. Their stick and straw-capped cones scattered through the woods, must be familiar to all

wood-land walkers. Without, a mound of confusion, within they are a marvel of arrangement. The conical coping which presents itself to our eye, as the roof of one of these sylvan habitations, is indeed the roof, but may also be considered as the upper story, or perhaps several, which contain within them various chambers, one in the centre larger and loftier than the rest, with passages of communication, besides others which lead to the exterior of the nest. The outer entrances of these various avenues, at other times open, are carefully barricaded, not only in winter, but in rainy weather, and also of a night. To construct fabrics like these, or any fabrics at all, out of such materials as straw, sticks, grains, and other miscellaneous substances, all dry, light, and unadhesive, would seem a wonder, would be in fact an utter impossibility, but for the mortar employed also by our rustic builders. This is composed of earth, that chiefly thrown out in hollowing the ground for the foundation of their edifice, which, tempered with rain-water and mingled with the substances above mentioned, render them capable of sufficient compaction to maintain their places and resist weather.

Beside and beneath these upper chambers, the attics we may call them, of the Wood-ant's dwelling, it contains, excavated within the ground, another set of apartments with convenient passages, to which the inhabitants all retire on the appearance of winter, therein to slumber with more or less pertinacity according to the severity or mildness of the season.

The habitations of Ants are of different construction according to the species of their builders, some being raised like that above described, and formed mason-like of earth, while others are mined beneath its surface or excavated in wood. All are difficult to follow in their progress towards completion ; Huber found it so, even with the assistance of artificial Formicaries ; but the labours of our Wood-ants are more open to observation, as they work less under cover than the more regular “Masons,” “Miners,” and “Carpenters” of their indefatigable race.

Our villager's “many friends” of the old pollard, are intended expressly, though not with reference to character, for a family of the large brown Oak-Aphis, greatest of its tribe, with a pipe or sucker of prodigious length, which, when not employed in extraction of sweet juices from leaf and branch, is carried under the body, passing upwards like a tail.



No one took notice of our poor dripping traveller



LIFE IN DEATH.

“ Life mocks the idle hate
Of his arch-enemy, Death.”

WE were loath to begin the year by contemplation of our Insect subjects while buried in a sleep wearing Death's perfect semblance ; but we can look at them now, and their dreamless slumber inspires no corresponding dulness, but only curious expectancy ; for they are about to awake, and soon their songs of life and liberty, their morning hymn and their evening boom, will be resounding over the bursting hedgerows and the opening flowers. The Bee is still mute ; the Beetle still motionless ; the Butterfly (like the bud) still enfolded in its

protecting shroud; but they are not the less existent, and to discover *where* and *how*, is a curious object of pursuit, and eke a cheerful one, shewing how life and pleasure, activity and beauty, lie lurking under a thousand dry and death-like forms, to which they owe their preservation.

With our Cricket-like propensities, it is not for *nothing*, we can tell you, that we are tempted from our cheerful hearth, on this side of April; but in hunting after hidden *life*, do we not still pursue our favourite element? What seek we still, through frost and snow and torpor, but sparks of vital *fire*, emanating all from the Great Source of heat and light, of love and wisdom, and ready to be kindled at His bidding, by the returning sun, at once His servant and His image? With intent of discovering life thus hidden under seeming death, we were out yesterday seeking after Moths and Butterflies, or, more properly, after what will become such in due season; but considering, as we shall further illustrate by-and-by, that all the changes of these Insects are only a series of developments, we may look upon our search, and for novelty's sake, so call it, as a Butterfly hunt in winter. Please you, our friends, herein to join us, as we retrace our ground, this time (for your indulgence) by the fire-side; but in good hope, that by the next, we shall tempt you to follow us in right good earnest to the field.

Our first preserve, and, as already noticed, one of the *best*, is our garden, albeit but a very little one. You might walk

round it twenty times, perhaps, in an hour, and on such a day as this, or yesterday, might look about you for the "Life in Death" of which we have been talking, and see no signs of it, except in the ever-greens and crocuses and snow-drops, and hear no sound of it, except in the voices of the thrush and robin from among the leafless branches; but he who would become cognisant of surrounding Insect life, veiled as it now is, under the apparent death of winter, must try to provide himself with spectacles—none of your barnacles of crystal or glass, but a pair of invisible *perceptors*, acquired by habits of careful observation. It has been aptly said, that the "memory dwells in the heart;" and it might be observed with equal justice, that every other faculty, and even every sense, has its seat in the heart also. How quick of sight and quick of ear are the dullest of us all, to objects of such a sort as have once gained a hold upon our *liking*, and what is it but our apathy of *heart* towards Nature and its Mighty Author, which with reference to so much that belongs to them, causes us to be for ever verifying the assertion of *one* intelligent observer,* that "the art of seeing is but rarely practised."

Well, now to our garden. Let us look around, and here on this bounding hedge we discern, by help of the spectacles in question, a something rarely enough seen, although exposed to our view almost everywhere on every winter's day. Amidst the intricate branches of the bare hawthorn, stretches forth

* Bonnet.

an arm, distinguished from the rest by a circlet of beads, a many-rowed bead bracelet, as regularly wrought as bracelet ever worn on lady's wrist, or woven of silk and beads by lady's fingers. This piece of natural jewellery is the work of a certain Mother Moth, whose own eggs, set in an indissoluble weather-proof cement, are the living gems of which it is composed. We can tell you, however, that the hawthorn does not (after the fashion of some fairer wearers) display this ornament without having paid for it, partly already in hard green leaves of last summer, the remaining price of her pearls to be discharged in the forth-coming spring on the first issue of new foliage. The deceased manufacturer of this dear-bought ornament, was a female "Lackey," member of a tribe so called on account of the gaudy liveries (blue and red, white and yellow) in which, while Caterpillars, they are arrayed at the cost, as we have seen, of the unhappy tree (be it hawthorn, plum, pear, or blackthorn) upon which they happen to be dependants, often by dozens or scores, stripping it of green honours after the manner of lazy lackeys of another sort, the devourers of trees heraldic. From these bracelet-eggs will come forth with the opening leaves, just in time to devour them, a new troop of these Lackey varlets, which in due season (about June) will doff their coats of many colours, for the sober chrysalidan-brown, and in July emerge from their Aurelian shrouds and cases, a company of sober-suited light-brown Moths, images of her, their lady mother, the constructor

of this bracelet. That we may look into its workmanship a little closer, let us cut it from the hedge, with the branch it compasses, and from which we can slip it like a ring. We find on inspection, that each of the beads or eggs comprising it, though round externally, is shaped like the arch stones of a bridge, the whole of them being cemented together in like manner, and thus rendered so strong, compact, and impervious, as to preserve unharmed through winter's wet and cold, the embryo lives for whose protection it was intended.

Here close at hand, we have another illustration (but how beautifully varied!) of the same preserving care, exerted through the medium of instinctive agency. On another leafless spray of hawthorn, hangs another group of Insect eggs, the embryo progeny of another maternal Moth. These, however, instead of being united, as in the bracelet, with strong cement, are loosely scattered, but by no means carelessly, for they are laid upon an oval silken bed, the warm cocoon, which having, while she was a Chrysalis, served to protect the mother, was converted by the maternal instinct of her mothhood into a winter cradle for her eggs. From these, in the month of May, will appear a brood of Caterpillars, at first dark and hairy, afterwards black and grey, with bright yellow tufts, and red and yellow spots, and from these, after the usual changes, we shall have a company of Moths called "Vapourers," the females of which are almost wholly destitute of wings. One of these was the layer of the eggs in this cocoon, which furnishes, therefore,

a striking instance of a seeming deficiency of organization being compensated by an instinctive perception. The mother Moth has no wings wherewith to travel far in search of a safe asylum for her eggs, and she would seem, for this reason, guided instinctively to employ her own discarded covering as a bed suited to preserve them.

Looking however at these germs of life, as they lie here exposed upon the leafless branches, neither bed of cement nor bed of silk would seem to afford a very secure protection against the frosts and winds of winter. Nor would they perhaps, but for the death-defying quality of the vital sparks within these tiny egg-shells, which appear, while thus concentrated, to possess a stronger power of resisting cold, than when they animate their respective forms after expansion. Insect eggs have been found uninjured after exposure to an artificial temperature of 22° below zero. That of 16° or 17° has sufficed to destroy Insects themselves, and these (of which great numbers pass the winter in the egg) have been noticed as even more abundant than usual, after seasons of extreme severity. An example of this fact is adduced by Rennie as having occurred in the spring of 1830.

Let us seek now for a specimen of insect life (though still it may be only "Life in death") advanced one step beyond its threshold, or from egg to Caterpillar. But without a leaf yet opened for its support, where is the Caterpillar to be found? Perhaps we must go farther than our little garden to discover it,

for as we look about us, not a living thing, or one like it, can we see, except that rogue of a thrush, busy yonder at a currant bush. Suppose we watch him, and see if he may not prove a guide, an indicator to assist us in our search. What is he about? Plucking and picking at the bare branches, when meanwhile, close beside him, lies a snail, one of his favourite morsels. There goes the quick-eared songster, put to flight even by our stealthy step; but let him go, we shall find out, all the same, the business he's been after. Aye, aye, Sir Thrush, we even thought so,—thy large bright eye has been quicker than our own, for all our boasted spectacles, in discovering, before us, the very game for which we have been hunting. We are not so clever as thou art in detection of life, clothed in the garb of death. On this branch of the currant bush, where thou wast so busy, remains a trio of stiff, stick-like little animals, more like twigs than Caterpillars, and distinguishable only from the branch itself, neither by form nor motion, but slightly by colour, which instead of brown, is whitish yellow, besprinkled with black. These are the Mag-pie Caterpillars of the Mag-pie Moth, numbers of which, so called from their mode of colouring, are to be seen in almost every garden, flying heavily through the twilight of summer's evenings; and from the eggs of one of them, deposited on this currant branch, came forth, in autumn, the curious specimens of "still life" now before us. In these we have an instance, among others, of Caterpillars defended through the winter by a

state of torpidity in which they have now continued for many weeks, without eating, and will thus remain till the breath of spring has roused them to activity, and provided employment for their jaws. The power of Caterpillars, also, in resisting cold has been proved by experiment to be very great, scarcely indeed inferior to that of insect eggs. Those of the cabbage, frozen so stiff as to snap like glass, have yet lived and become Butterflies, while others have revived, after chinking like stones when thrown into a glass.*

What next have we come to, basking in a ray of wintry sunshine on a root of dandelion? It is another Caterpillar, now a very little one, because short of his full growth, not naked, like the tiny sticks of the Mag-pie, but clothed, *à la Russe*, in a brown fur jacket.

The moment we touch him, he curls up like a hedge-hog, and falls from the plant upon the ground. From this practice he is known to some people by the appellation of a "Devil's ring," though why a creature harmless as a dove should have acquired this misnomer, it is hard to say. His proper, though not, in his present state, a much more fitting appellation, is the Tiger Caterpillar of the Tiger Moth; he is now more like a little bear, but bear or tiger, we have now at home a box or cage-full of the like animals, born from the egg in the early part of last October. Instead of attaining in a few weeks to the full measure of their bulk, as is the case with the summer

* Dr. Lister.

broods of the same Caterpillar, these, like the little individuals just encountered, have been, since an early stage, quite stationary as to growth, nearly the same as to motion, have kept on the same coats, instead of often changing them, and it is only in mild weather that they eat sparingly of the leaves of dandelion, wherewith it is not easy to supply them. When the latter are entirely nipped by frost or covered by snow, our little winterers subsist as well without them, upon sleep. In this, their nice and altered adaptation to a rigorous season and short supplies, are not the growth and appetite even of these Caterpillars worthy of notice?

With the arrival of April, and a plentiful supply of dock and dandelion green meat, we shall find in our little "Tigers" a proportionate increase of activity and appetite; their skins, as they increase in size, will be frequently cast, and in May, each having attained to the full measure of its growth, will display to great advantage its jerkin of black velvet, ornamented with rows of white studs, from each of which springs a long tuft of gold-brown grey-tipped hairs, forming, *en masse*, an upper coat of fur. Our Caterpillar will then speedily repay us for the trouble of his keep, by showing how cleverly he can make his cocoon, spinning it of his own silk, interweaving it with hair plucked from his own body, and eking out these natural materials by extraneous ones, such as grains of earth, pieces of leaf, or even bits of paper when placed within his reach. Shut up in this secure asylum he will become a chrysalis, and

in two or three weeks, come forth a Tiger Moth complete, a winged creature, glorious in "crimson dyes" and richest brown and cream colour. Although these and a few other fur-clad Caterpillars seem partly indebted to their clothing for protection against the cold, there are also several which live through the winter, and show moreover signs of life, that have scarcely a hair upon their backs. Of these, some are exceedingly plump as well as smooth, and have therefore been supposed to be kept warm by encasing fat.

* * * * *

Leaving the garden, let us extend our hunt over a wider range, and here, without the paling, we discover, hung upon an oak-tree, another cloak of protection for Caterpillar life amidst the surrounding death of vegetation. We have here no solitary survivors, but a social company, if social we may designate a few dozens of half, or quite, dormant little animals, bidding defiance to Jack Frost from behind the triple tapestry of a silken hammock woven by themselves. This their winter dormitory is of shape irregular, with here and there a brown oak-leaf woven into its outward texture, the interior being divided, also with tapestry, into various snug apartments, where the little inmates lie coiled together by twos and threes, till waked into activity by the coming spring. These, at present harmless slumberers, will grow, by and bye, into tremendous ravagers of the oak and other trees, and will then on the boughs they have stripped bare, be sufficiently discernible in their tufted

parure of black, white, and scarlet. These are the progeny of a pretty white moth, yeapt the gold-tail, from a tuft of gold-coloured hair at the end of her body. Protected in the above and various other manners, a number of future Moths and Butterflies are now existent in the forms of *Egg* and *Caterpillar*, but many more of them, by far indeed the larger portion, have been sleeping away the winter, and are slumbering yet, as *Chrysalides*. To “disquiet and bring up” one of these Insect mummies from darkness into light, let us make the next object of our walk. If we had had with us our exhuming digger, we might soon unearth some from beneath the trees about us, but in default of a trowel, we must seek a chrysalis buried indeed, but not within the ground. The light vegetable mould, which fills the trunk of this decayed willow, has often furnished us with an Aurelian treasure, and if one is to be found there now, a stick will suffice for its discovery. This time however, explore it as we may, our mine would seem exhausted—But stay! What have we here? A sort of rough excrescence seeming to grow out of the tree, just within the edge of its shell-like trunk. When we come to look at it, it seems not, however, like a vegetable growth, nor yet a vagary of “decay’s” sometimes creative “fingers;” it is the wood-built structure of a Caterpillar, and his present dormitory, now that he has cast off his working dress, and put on the monastic habit of an idle chrysalis. Let us look into his cell, or at least on its exterior, a little closer.

The fabric is of oval form, composed of pieces of rotten wood and bark, meshed in and kept together by silk and gluten ; the latter renders it so hard, that it refuses to yield under pressure of the finger ; we might perhaps force it, though not without trouble, by aid of stick or knife ; but let us spare it, leaving its ingenious builder and occupant to finish, unmolested, his winter's nap, to sleep on till the merry month of May ; and then, forcing his wooden walls by help, it is said, of an expressly provided acid, to expand his pencilled pinions on the evening air.

But it might please you, curious companions of our ramble, to see for yourselves, the pattern of those pretty pinions ; and so in due time you shall, for we have at home almost a fac-simile of this wood-built cell, constructed under our own eye by a brother artisan, a "Puss" Caterpillar, which as a chrysalis, now lives within it. When, as a young May Moth, it pleases to emerge, we promise you its picture, both in that, its palmy state, as well as in its earlier capacity of ingenious builder. This "Puss" chrysalis has afforded a specimen of numerous others of the tribe of Moths, now lying thus entombed and enshrouded, though in divers manners ; but besides these, there are some belonging to the race of Butterflies, which may now be much more easily detected, as they hang, both shroudless and tombless, betwixt earth and sky. Yonder is the wall of a kitchen garden, let us cross the road to it, and we shall be sure, almost, to find an instance of what we speak

of. Here is the very thing! Just under the coping of the wall, its only shelter, slung in horizontal position, hangs a chrysalis, which by its shape, angular instead of rounded, as well as by the open mode in which it is exhibited, we recognise, at once, as a future Day-flier; and by the colour, a greenish yellow, besprinkled with black, no less than by its choice of situation, know it to have been, in autumn, a Cabbage Caterpillar, to appear in spring (though not perhaps till May) a large white garden Butterfly. It hangs here attached to the wall by a double support, a silken button at the tail, and a band or loop of threads round the middle of the body, its last pieces of ingenious workmanship while in the Caterpillar form; and we perceive, also, a thin silken web stretched over a small space of the brick above. This is a preparation of its surface to receive the ends of the supporting girth, which would not else adhere. On this last practice of the Cabbage Caterpillar, a curious observation has been made, serving to illustrate the variations of instinct to meet unusual circumstances. When confined in a box covered with muslin, a texture to which its silken girth can be easily attached without any previous preparation, the caterpillar has been found to spare itself the needless trouble of spinning any such facing web. We have one now in our possession in a box, where the web certainly has been spun, but our chrysalis being attached by its means to the paste-board side, and not to the muslin top of its apartment, offers no contradiction to the preceding statement.

Let us linger for a while under this southern wall. The sun, gleaming at intervals all the morning, has now come forth in right good earnest, and it is not for *us* to turn our back upon the sun. This February noon is more soft and gentle than many a May morning, and here we might believe it veritable spring. But why should we fancy it any thing but what it is, a day when surly winter, like many other surly visitants, seems to have grown tender at thoughts of bidding us farewell. Besides, we may wait with patience for spring leaves and spring flowers, for we are not without our verdure and our blossoms too, all the dearer in that they are more rare. On the face of this weather-beaten wall, our eye can regale itself on pleasant patches of emerald velvet, tufts of winter moss, bright enough to make the green of spring sicken and turn yellow with envy. Above, rise the clustered flower-buds of the elder, and yonder across the road, hang the drooping blossoms of the hazel. What want we more in anticipation of spring delights? Not spring music while we are listening to dear robin's solo, sweeter than an orchestra of warblers. Care we for spring Butterflies? We may content us with their promise, as it hangs in safe dependence on the silken threads of this our cabbage chrysalis, and the remainder of its yet quiescent crew. But look! What is flitting past us, even now? In very sooth, a "Devil's Butterfly" has come from the ivy overhead, or a warmer place below, to reproach us for indifference to Butterfly presence, or to upbraid yonder cabbage

sleepers for still sleeping on. There! now she has settled, not on the elder clusters, nor yet on the hazle flowers, but on this leafless hawthorn, and here do her "golden pinions open and close," as if she designed to enhance their living splendour by contrast with the death-like branches. Well! be thou Butterfly of "devil" or of "witch," as our brethren of Scotland are wont to call thee (we suppose for thy winter-braving hardihood), thou art a glorious creature, and thy tamer name of "little Tortoise-shell" does but sorry justice to thy glowing beauty.

Our pencil has not done thee more, and were it endowed with tenfold skill, we should yet exclaim with fit humility, oh!

"Who can paint like nature?"

A verbal portrait, should we attempt minute description of thy bright blue crescents and thy golden hair, would do thee still less credit. We shall only, therefore, sketch broadly thy most striking features, that our friends, wherever or whenever met with, may recognise at once the numerous members of thy handsome family.

This "little Tortoise-shell," which in common with others of her hardy sisterhood has survived the winter, her radiant robes laid up in ivy or some other close green wardrobe, belongs to the beautiful genus "*Vanessa*," or Fan-winged Butterflies, which, while in their state of spiny Caterpillars, feed for the most part upon nettles. They are distinguished by their warm rich colours, their angular scalloped wings, with points

at the hinder margin, and the shortness of their fore-legs which do not serve the purpose of walking.

Another species of the same genus (*Vanessa*), less common than the above, is the Io, or "Peacock's eye," so called from the eye-like spots, looking out from the deep brown-red of its ample wings. Then there is a Butterfly of another sort, a yellow-robed harbinger of spring, the very first that comes regularly in that capacity, whose appearance we must announce to be at hand. We *might* have met him even in our ramble of to-day. If we had, we should have known and welcomed him as our favourite "Brimstone,"—he of the smooth-cut sulphur-coloured pinions, all four ending in a pointed angle, and dashed with a speck of reddish-brown.



In the apparent death of winter.



A MILITARY EXPEDITION,—AND A NEW BATTLE OF THE AMAZONS.

“Cosi per entro loro schiera bruna,
S’ammusa l’una con l’altra formica,
Forse a spiar lor via e lor fortuna.”—*Dante.*

IN the midst of various other nations are now dwelling and have dwelt from the year—nobody knows what—a pigmy people, whom we shall call Formicans, divided into tribes, and long celebrated for their activity, industry, and form of government both civil and military.

If stature were to be considered as the true measure of greatness, at no period could this dwarfish race have pretended

to compete with any of the nations over whose territories they were distributed, although, in many other respects, their superiority was once indisputable. To take England, one of their localities, as an example. When our ancestors lived in scattered huts, wore only skins and blue paint, shot at wild beasts with arrows, and tore each other to pieces, much after wild-beast fashion, it is certain that the Formicans' progenitors lived in cities, wore polished armour, possessed a sort of artillery, and fought pitched battles. In one respect, however, besides that of their high antiquity, the people of whom we are speaking, although for the most part of eminently terrestrial habits, resemble the natives of the Celestial Empire, namely, in their marked characteristic of stability, understood in the limited sense of standing still, for as were their ancestors, so are their existing descendants, and so will be their sons' sons to the hundred thousandth generation.

The custom of slave-making, as still sanctioned by the example of civilized and christian nations, has been always practiced by certain tribes of this pigmy people. In some respects, however, our Lilliputian slave-owners are wofully behind-hand, as compared with those of larger stature, especially with the dwellers in a certain Trans-Atlantic Land of *Freedom*. They know not the meaning of Lynch-law, the sound of a whip is never heard within their territories. The slaves live as well as their possessors, and on some occasions, the common rule of such relationship being reversed, would

seem to take the chief authority into their own hands. With all this indulgence, strange as it may appear, these little slaves are famous hands at labour. No Jack-of-all-trades, nor maid-of-all-work (for be it here observed that they are all females) can beat them for universal usefulness. The greater number of their owners are of the same sex with themselves, and, what may seem on this account the more remarkable is, that they are all without exception soldiers—amazonian soldiers. As was once said by a certain corps of our own gentlemen militaires, or said for them, these lady warriors are a class, who (fighting of course excepted) never do anything. It follows, consequently, that their slaves have everything to do. In a populous city they are, at once, the builders, the scavengers, the porters, and the nurses of the infant population. Nay, they are even the feeders of the grown-up free community, which consists solely of the above-named lady soldiery, a few idle gentlemen, and some two or three queens or princesses of the blood. The slave population being thus absolutely necessary to the comfort, nay, very existence of their owners, it of course follows, that the keeping up of its numbers is a most important matter. This object is effected by predatory excursions, taken frequently into the territories of those harmless unoffending tribes which furnish the desired supply, and from which the female warriors usually return triumphant, each laden with the useful, if not glorious, trophy of an infant captive.

Arrived at the city of its captors, each little slave in embryo

is forthwith consigned to the charge of a compatriot slave-nurse, who though ignorant perhaps as the precious innocent itself, that the ties of country, or even of family, unite them, fondles, feeds, and fashions it for the benefit of their common owner, into just such another patient, busy *fac-totum* as herself.

The government of all the Formican states, whether slave-making or otherwise, is, properly, republican; yet one sovereign lady, sometimes two, sometimes even a triumvirate of queens, receive their homage. And truly no monarchs obtain or could desire a greater show of humbly devoted loyalty: each royal personage has her court, and is surrounded by her courtiers, effeminate princes whispering soft nothings into her satiate ear, mail-clad Amazons attending as her body-guard, while in her royal progresses, she is followed by admiring crowds; but as to real political power, king or queen Log may boast as much. In short, possessing an ample share of its honours and its pleasures, the chief business of royalty with the female sovereigns of the states of Formica, consists in supplying a numerous progeny, not merely to be provided for by the nation, but to keep up what would, otherwise, be its failing population.

On a certain day of a certain year, the Amazonian chieftains of Rufia, one of the slave-making states of Formica, assembled to concert a plan of operation for a new campaign or marauding expedition. Some people might suppose that they had already settled, or that they would settle beforehand, upon some decent pretext for attacking their peaceful neighbours,—a matter which

sometimes puzzles the ingenuity of civilized cabinets ; but, like bold border chieftains or honest freebooters, our warlike pigmies always set at nought such empty preliminaries. That moral sensitiveness is not theirs, which must wrap up motives in a cloak, to hide them, if possible, even from themselves ; and as for their neighbours, since it never consorts with their tactics to give notice of an incursion, they cannot to them, of course, attempt to justify the making it.

It was towards the close of a fine summer's day, that the army of the Rufians, consisting of a large body of infantry, was seen issuing from their capital. Their march soon brought them to an arid sandy plain, strewn with rocky fragments, between which they pursued their way in winding but unbroken files, their polished brown corselets glistening like sparks of fire in the glow of the declining sun. Marching with great rapidity, considering their diminutive stature, they soon traversed this desert-like tract without loss or accident, a matter for no small congratulation, seeing the manifold dangers to which their exposed route had rendered them liable. In the first place, that which to our little Amazons appeared, as we have described it, a rock-strewn plain, was none other than a public causeway, used by the gigantic creatures who consider themselves the lords of the land, and had one of these happened to pass by during the transit of the Rufian army, his direful footfall would have enveloped whole divisions in awful darkness, to be followed by annihilation.

A somewhat similar, but still more overwhelming agent of destruction, accompanied by deafening thunder, perhaps by fearful lightning, might also have overtaken them, in shape of a tremendous revolving circle, which would instantly have ground them into powder amidst the coruscation of flint and steel. Biped enemies of lesser bulk, but to them monsters still, with gaping toothless mouths, might have swallowed up a legion at one fatal swoop.

These and other perils happily escaped, the Rufians arrived at what in our language is yclept a hedge, though known in theirs by a word, or sign, expressive of a mighty forest. To cross this barrier and re-assemble in compact array on its further side, was a manœuvre requiring not a little skill, but our little Amazonian troops effected it in the most creditable manner, which was the more surprising, as they seemed destitute of a leader or officers of any description to direct their movements.

Leaving the woody barrier behind, whose deep evening shadow still threw the army and its movements into shade, a country which presented difficulties scarcely inferior, yet lay before them. Imagine a troop of infantry, or a soldier of that troop, compelled to force his way through an intricate jungle, composed of reeds so large that the least of them should more than triple the girth of his own body; so lofty, that his eye could scarcely reach the top of a single stem, and all these thickly interspersed with gigantic leaf-blades, waving and

clashing above his head, or lying across his path in intricate confusion, obliging him alternately to climb, to leap over, and creep under these and a thousand other impeding obstacles; only we say, imagine the fatigue and difficulty of such a progress to a single individual, and its hundred-fold embarrassment to one of a phalanx constrained to keep together and proceed in a given course, and you must allow no little share of skill, perseverance, discipline, activity, and strength to the Rufian army, in its laborious passage across an unowned field. The march being too long to accomplish at a stretch, they were obliged to bivouac for the night upon the plain of which a small portion yet remained to be traversed. Many of our little Amazons crouched down, weary, and wet with the evening dew; some perhaps with spirits as well as corselets damped, but when they awoke in the morning all their ardour was renewed. They cared not for the morning dew-drops, so bright and glistening, and as they gaily shook them off, they discerned through the overtopping grass, the single dome of the city of Fusca, the capital of the dusky Fuscans, which they were about to besiege. Then, as with the valiant but weary crusaders, when they first beheld the domes and minarets of the Holy City,

“Ali ha ciascuno al core, ed ali al piede:”

both their hearts and heels acquired wings. Onward they pressed, while some of the most ardent of the assailants, leaving the main body behind, rushed forward to attack the

enemy's sentinels, who were posted at each of the avenues leading down into the subterranean city.

These watchful guards, who presently gave notice of the approaching army, were, like their assailants, all Amazonian soldiers, only of a much milder and more pacific disposition, being used to combine gentle employments with their profession of arms,—a prosession, moreover, never exercised except defensively.

Slavery, as inflicted on others, is a thing unknown among the Fuscans; and their working females, who constitute the chief bulk of the population, are not only the sole defenders of the state, but also perform all the useful offices, which among the Rufians are made to devolve upon the slaves.

When warned of the enemy's unwelcome appearance, the inhabitants of Fusca, those at least of them who belonged to the preponderating class just mentioned, were busied in their usual avocations. Some were building, some clearing the streets, some tending their domestic cattle, others waiting on the great—in other words, the idle of the community; others feeding the children of the royal nurseries, for with the Fuscans *all* nurseries may be called royal, because amongst them, as well as amongst the Rufians, the privilege of maternity belongs to royalty alone, the queens being always the queen-mothers of their people.

Though thus taken by surprise amidst their multifarious employments, the garrison of Fusca had one advantage—

though not fore-warned, they were always fore-armed. Like the knightly "ten" of Branksholme, who

" — quitted not their harness bright,
Neither by day nor yet by night,"

they always ate, drank, worked, even nursed in their coats of mail; never laid down their arms, and always carried their ammunition about them. Having, therefore, no belts to buckle, no guns to load, no horses to saddle, the defending force was presently mustered, and issuing in various divisions from the city gates, left few within its walls, or to speak more correctly, within the protecting dome by which it was surmounted, except the cowardly and helpless; to wit, the *masculine* portion of its inhabitants, wholly made up of *effeminate* lords who always hung about the court; the numerous infant families which claimed the queens (of which there were three) for mothers; their Fuscan majesties themselves, with several princesses; and besides these, only their immediate and indispensable attendants, namely, a few compelled to remain within the nurseries, and the royal body-guard, a little Amazonian band, as brave and as much devoted to Fuscan royalty, as were the "red-granite Swiss" to the unhappy majesty of France.

Now comes the tug of war. The defenders are assembled in front of their city, fighting for their queen, their lives, and the liberty of their infant population. The assailants, their main body having now come up, are fighting for glory and for

plunder, and above all, for the rape of Fuscan babies, to become the future slaves of their own rising generation. Oh! for a Homer's pen to describe the universal ardour and the individual prowess of our pigmy Amazons. By far more numerous are the dusky Fuscans, though in discipline and personal strength they are much inferior to the warlike Rufians. Of the latter we have spoken, hitherto, as Lilliputians, but now we have to treat of them as opposed to a tribe of very inferior stature.

The battle-field, an area of some four feet square, is strewn with dead and dying. Sulphureous fumes exhale around. Single combatants by thousands, each so eager in their respective contests as to seem unconscious of all besides, have spent their ammunition; but with rancour undiminished, behold them now, limb to limb, head to head, seized by each other and held in savage grip—now wrestling upright, now rolling in the dust; long does the dubious strife continue, till a third, Rufian or Fuscan, comes to turn the balance and throw death into the ascending scale. In another quarter, see perhaps a dozen combatants of either party, all firmly linked together in a living chain, dashing, writhing like a wounded snake in serpentine convulsions, till snap goes a link beneath a mortal blow; but in an instant the dissevered portions reunite, and struggle on with double fury.

Look now at that powerful long-limbed Rufian and the active little Fuscan, her opponent: the latter springs like a cat o'

mountain on the chest of her bulkier foe ; but dearly does she pay for her temerity. Caught in the grasp of the Amazonian Ajax, she is crushed and falls strangled to the earth. She falls—but let not her conqueror exult—a sister heroine, no bigger than herself, and like herself, carrying in a little body a mighty mind, beholds and vows to avenge her fate. She too springs upon the Rufian, but with more effective grasp, her powerful jaws enclosing, as in a vice, one limb of her athletic antagonist. The Rufian severs in twain the body of her assailant ; its lower half falls and is trampled in the dust ; but (horrible to see !) the upper portion still retains its hold, supported by the jaws which death has double-locked. The fixed eyes continue to look up angrily into the living face, the rigid arms to encircle the warm body of the wounded Rufian. Vainly she strives to shake off the hideous burthen : like the old Man of the Mountain, it will not be dislodged ; and though the Amazon of Rufia left that battle-field, yet

“ —— ever more
The lady wore,”

carried, perforce, about her, the slaughtered Fuscan’s head and shoulders, frightful trophy of her dear-bought victory !

But how goes the day ? How flows the tide of battle ? Will Rufia or will Fusca, will might or right prevail ? Shall the infant Fuscan females grow up to be *maids* of all-work at home, or *slaves* of all-work in a foreign land ?

They run ! they run ! Who run ? inquires the eager but

dying gaze of a wounded Amazon, half raising her recumbent form and trying to scan the face of the field through the mist of her glazing eye. She saw them not; but too plainly to be seen were the vanquished Fuscans in full retreat towards the city which their efforts had proved ineffectual to defend. The remnant of their army, still numerous, though more than half destroyed, having reached the dome-like roof which covered in their subterranean capital, were seen to overspread its surface, then suddenly to disappear, defiling downwards through the descending streets. But the enemy was close at hand, and the dome just occupied by the scattered citizens, swarmed presently with the invading legions. The latter were soon in possession of the principal entrances; but even while these were being won, their sappers and miners opened breaches in the earthen masonry of the dome, so that the entire force of the invaders was speedily pouring from all quarters into the unhappy city.

Who can paint the scene that followed? Who can number the innocents that day made captive? There was "Rachel weeping for her children;"—but, strange anomaly! the Rachels who wept for them, who had bled for them, and died for them, were not their mothers. These, the queens of Fusca, shut up within their palaces, surrounded by their faithful body-guard, heard the din without, the strife, the lamentations, and moved not, perhaps were not permitted to move, their august persons to inquire the cause. It was not the mothers, but the loving foster-mothers, at once the tender nurses and the brave de-

fenders of the baby Fuscans who, driven from the field, still struggled to preserve them. Their deeds of devoted heroism would fill a volume; one of them will adorn a page. A Rufian enters an apartment, where ten of the little Fuscans are committed to the care of one attendant, on whom she rushes. The ruthless Amazon by main weight bears her to the ground, then severing with her trenchant weapon the lower limbs of their faithful guardian, snatches up two of the infants, and retreats. But life and affection are still strong within the dismembered body of the devoted nurse. Moving on her bleeding trunk, she bears with persevering agony, first one, then another of her helpless charges to a place of concealment, and not till the last is hidden (as she fondly hopes) from the search of its enemies, does she fall down and die.

Triumphant was the homeward march of the victorious Rufians, each Amazonian victress shouldering her ravished bantling. Of the little captives, some (the *pupæ*) were wrapt in a sort of swaddling clothes, whilst others (the *larvæ*), who were younger and not thus enthralled, felt equally ill at ease under the awkward handling of their warlike captors. No longer keeping (in consequence, perhaps, of their acquired encumbrances) the regular array in which, spite of impeding obstacles, they had advanced towards the ransacked city, their return, for the greater portion of the way, was straggling and irregular: but converging from all points, they at last reassembled again in a compact body before their own capital.

Then did the slave-sentinels give joyful notice of the conquerors' approach with their slave-booty. Then did the slave-nurses hasten to receive the slave-babies transferred to their tender care. Little did they dream, poor simple bodies ! that the ravished nurslings had sprung of the same race, perhaps of the same parentage, as themselves. And what mattered it, since in their ignorance was bliss ? And so, while some among them hushed and dandled and fed their little compatriots and cousins in captivity, others (much after the fashion of a gulled constituency chairing a successful member) carried their victorious captors in triumph to their homes. Then, while the illustrious Amazons reposed after their recent toils (toils undertaken for the express purpose of being the better able to indulge in idleness), others of their attendants (also of course slaves), served them with the most delicious viands, which, to their recipients, would probably have been more grateful still, could they have been even spared the trouble of opening their mouths.

Thus were the free nurseries of Fusca stripped almost to extinction, that the slave nurseries of Rufia might be replenished to overflowing. An unfair procedure, doubtless ; but we must not throw a stone at an ant-hill of oppression, while we tolerate a mountain of the like, as heaped by certain of our (so called) christian brethren on their brethren of our race.

* * * * *

The foregoing, like many another historic record of a graver

nature, is not, we confess it, exactly true; but the following notes, drawn chiefly from Huber, the veracious chronicler of the Ant nations, will show that our fiction treads very closely on the heels of fact.

The wars of Ants were observed long ago, and one of their battles, fought under the pontificate of Eugenius IV., was honoured by having for its historian Æneas Sylvius, who was afterwards Pope himself, as Pius II. The most warlike of the Ant tribes, according to Huber, is the Wood-ant, the largest British species, of which we have elsewhere told a tale with relation to other than its military characteristics.* These, as well as its domestic doings, are delightfully described by the above writer, and a walk to some neighbouring wood is almost sure to afford personal acquaintance with these sylvan warriors with their corselets of rusty red, and black head and tail pieces. There also we may see their "fortified cities," their "military roads," diverging from these "citadels" like so many rays from a centre; their regular battles with the same or a weaker species; their skirmishes, their single combats, their ambuscades, their barricades, and all the pomp and circumstance of Formican warfare. But though it was known centuries ago, that Ants made war, it was not discovered till of late years, and that by Huber himself, that they also made slaves, seizing them while in their infancy (their state of larva or of pupa) to be trained up for their service, by compatriot slaves already grown up in the same.

* *Supra*, p. 74.

The Wood-ant above mentioned has been frequently detected* in thus making free with members of its neighbours' infant population, and may probably turn them to the like useful account; but the slave-maker *par excellence* is a larger brown species, *Formica Rufescens*, not a native of the free soil of England, though the slave-made *F. Fusca*, or the negro, is. In the representation of these, our Rufians and our Fuscans, as *Amazons*, we have strayed but little, if at all, from nature, inasmuch as the fighters and workers of Ant as well as Bee communities are all females, though imperfectly developed; the few of another description, who are the sole mothers of the community, receiving, as such, the homage paid to sovereignty. Their courts, their attendants, their body-guard, their sentinels are no coinage of our own fancy, but the very words used by careful observers as best descriptive of the agents and offices which have come under their notice. If a few of our terms and incidents still seem exaggerated, for "artillery," read a discharge of formic acid, accompanied by a sulphureous odour, commonly ejected by the angry Ant; for "trenchant weapons," read the powerful jaws with which it can sever a limb or head of an antagonist, and you have plain matter of fact. By employment of these same jaws as hold-fasts, the head of a conquered Ant is not unfrequently (says our authority) seen suspended to the leg or an antennæ of its victor—a troublesome trophy which he carries to the day of his death. Again,

* By Gould, White, &c.

the following is only a simpler version of the story of our devoted Fuscan nurse:—A worker Ant, severed in two, has been observed with its upper half to carry to the nest no less than ten of the pupæ or larvæ of the community; and numerous are the like traits related of their devotion to their charges. When their cities are besieged (says Huber), they are sometimes seen by hundreds carrying off their young to preserve them from the enemy, bearing them in their jaws to the summit of neighbouring plants, or hiding them beneath their foliage; and when the danger seems overpassed, then do they take them home again, barricading the gates and guarding the approaches. The males of the Ant-hill, like those of the Bee-hive, are nonentities, except in the paternal character, of which, however, all the duties devolve, as we have seen, upon the indefatigable workers. Their maternal majesties, or queens, are more estimable personages, having, as foundresses of colonies, been in their time meritorious hard-workers themselves, however they may enjoy, afterwards, the sweets of well-earned leisure. Both the last named classes (the aristocracy of their tribe) are accustomed to keep their state in private till after midsummer, when they often exhibit themselves mingled with the vulgar herd on the domes of, or adjacent to, their cities. Seen thus associate, they may be known as Ants by their company, but they differ so widely from the working sisterhood, not only in possessing wings, but in shape, size, and sometimes colour, as to appear like insects of another kind.

In these, the differing forms of the different orders of a Formic community, we perceive an admirable fitness for the respective parts assigned them. The workers, with bodies narrow-jointed and pliant, strong limbs, large heads, and large powerful jaws, are framed for all activities of labour and of war. The lordly idlers, thicker bodied, more delicately limbed, smaller headed, destitute entirely of trenchant mandibles (the universal tool and weapon of the warlike workers), and possessed of wings, which would serve only as encumbrances in toils chiefly subterranean, thus bear externally their warrant of exemption from taking part therein. Last, not least, the queenly females, of matronly and portly bulk, and with pinions of regal amplitude, white and glittering, are endowed, equally, with "proper persons" proper to their places.



Now flows the tide of battle ?



INSECT AERONAUTS.

“Sore wond’ren some on cause of thunder,
On ebb and flood, on gossamer and mist,
And on all things, till that the cause is wist.”

THE weather is dry, warm, and still, yet without a gleam of sunshine,—a combination of winter gloom with almost summer mildness. Gossamer is floating or falling slowly through the air, numerous spiders are hanging, motionless, head downwards, in the centre of their geometric webs, lying in wait for prey, while others, restlessly ascending blades of grass or rail-posts, are inwardly invoking, we suspect, the presence of some gentle air, to assist them in shooting their lines, those threads of

suspension, long and strong, on which is to hang the ingenious fabric of their toils. This shooting of the spider's lines, and that associate "wonder," the origin of Gossamer, may as well form our not unseasonable theme. Autumn indeed is more especially the period when

"Gossamer floats, or stretched from blade to blade,
The wavy net-work whitens all the field ;"

but October, if we are permitted to enjoy its mellow riches, we shall find so much more fertile than the present month in insect subjects, that we are glad to take this of Gossamer, now, from the comparatively few, instead of choosing it, then, from amongst the many.

The apparent flight of the wingless spider from tree to tree, across water, and even through the upper regions of air, has been almost as great a puzzle to naturalists, as the Fly's walk against gravity. It was no doubt soon discovered, that this flight in seeming, was no more a real one than that of an aeronaut in a balloon, or than those of the fool-hardy adventurers, such as from the times of Hogarth to our own, have now and then made rope-borne transits from steeple to steeple.

That the spider travelled by a line was apparent enough to nice observers, but the marvel long was, how such lengthy lines could be shot forth, as, when attached accidentally to some fixed body, serve to provide the insect traveller with a cable bridge to cross from plant to plant, or from tree to tree ; or when floating loosely, serve equally to promote the

more ambitious purpose of bearing him upwards when disposed to mount in air.

Conjectures, numerous and intricate as these aeronautic threads, and often baseless as themselves, when detached from their *point d'appui*, have been hazarded on the above curious subject ; but it seems now pretty clearly ascertained,* that air is the chief and indispensable agent in the shooting of the lines, and consequent progress or ascent of the aeronautic spider. Several of these insects were placed on a branch fixed upright in a vessel of water. On exposure to a slight current of air, they all directed their chests towards the quarter from whence it came, and each emitted, from its raised spinneret, a small portion of glutinous matter which was instantly carried out into a line. The Spiders then ascertained by pulling at them with their legs, whether or not these threads had taken hold of, and become attached to, any object, and in this case, after having tightened, they made them fast to the branch they occupied, thus forming bridges for escape over which they passed in safety, drawing after them a second line as a security in case the first should fail. This was always their mode of proceeding when in the way of a current ; but under a bell-glass some were found to remain seventeen days without being able to produce a single line, whereby to quit their water-girt branch of durance. By a thread similarly produced, but unattached,

* See experiments of Mr. Blackwall in Phil. Trans. Also of Mr. Rennie, Ins. Architecture, p. 339.

the little *aéronaut* can spring up into the air,* nor is it (says Mr. Rennie) indispensable for her to rest upon a solid body when producing a line, as she can do so while suspended in the air by another.

However incurious about their mode of formation, nobody can have taken an early morning walk, especially towards autumn, without having noticed these lines or webs of the Gossamer Spider spread over hedge and field, a silken net-work, studded with dew-drop diamonds. The prodigious extent of these woven fabrics only corresponds with the surprising multitude of their fabricators, of whom twenty or thirty will sometimes be found assembled upon one straw of stubble. It would appear, on these occasions, as if a portion of the sky-lark's soaring spirit, infused by his animating song, was at work within these little creeping forms. All seem bent upon the object of ascension, all are in progress towards the summit of their respective stations, whether stubble-straw, blade of grass, hedge-twigg, or railing. Having climbed to the greatest height their legs will carry them, they raise their abdomens to a position nearly perpendicular, at the same time emitting a portion of the glutinous substance which forms their webs; this being acted on by the ascending current, is presently drawn out into fine long lines, when the spiders, quitting their hold of the objects whereon they stand, are carried aloft on their journey towards the clouds.

* See *Insect Architecture*.

Thus, in the words of Paley, has “this little animal, with no wings or muscles enabling it to dart, a path laid for it by its Creator, in the atmosphere. Though the Spider itself be heavier than air, the thread it spins is specifically lighter. This is its balloon—left to itself it would drop to the ground, but being tied to the thread, it is supported.”* All Spiders, however different the form of their webs, are said to proceed alike in shooting their lines; but those who may desire to watch the process above described, are recommended by Mr. Rennie to select for their observation one or other of the following species, common in almost every field and garden. The small Gossamer, known by its shining blackish-brown body and reddish transparent legs, or the Long-bodied Spider, which varies in colour from green to grey or brownish, but has always a black line along the belly, with a silvery white or yellowish one on each side.

Having thus seen the way in which Spiders shoot their lines, we come now to the examination of Gossamer, of which these lines form the material. After having served, singly, their fabricators’ turn, either as bridges to cross the vacant gulf, or as balloons to rise sky-wards, they are brought together by the action of “gentle airs,” gradually assume the shape of fleecy flakes, composed of irregular silky masses, and then by an ascending current of rarified air are borne hundreds of feet into the atmosphere. On falling, when the upward current ceases, it would appear by observation of the naturalist above

* Natural Theology, p. 377.

referred to, that few of these webs contain a Spider, though numerous winged insects are found entangled in them. Dr. Lister, however, found more than once in the webs which he saw fall from heaven, one of these mounting Spiders which he calls "birds," and describes some of them as converting their floating lines into chariots or balloons of flake, by pulling them in with their fore-feet as they fly. From the top of York Minster, the same observer watched the descent of webs, high above him, and on examination of some caught on the pinnacles of the cathedral, considered such of the adventurous aëronauts as he found within them, to be all *juveniles*, of light weight corresponding to their age. One of them he calls "an excellent rope-dancer, wonderfully delighted with darting its threads," adding, that "by means of its legs closely applied to each other, it, as it were, balances itself and promotes and directs its course, no otherwise than as if nature had furnished it with wings or oars."

The above appears, at least, a probable account of the formation of Gossamer, that substance of earthly and not celestial manufacture, to the mystery of whose origin Chaucer alludes in our prefixed motto. Some two centuries later, in the days of Spenser, our ancestors seem to have arrived at no likelier solution of this natural enigma, than the super-natural idea that these rising and falling fleeces were composed of dew burned by the sun; the Poet speaking of them as

"The fine nets which oft we woven see
Of scorched dew."

This is a strange supposition, viewed either as poetic or as popular, but stranger still was that of Dr. Hooke, a learned philosopher and first Fellow of the Royal Society, who lived in times so much nearer our own as the latter part of the 17th century. On microscopic scrutiny of these webs, "looking most like a flake of worsted ready to be spun," he surmised that "it was not unlikely that those great white clouds that appear all the summer time may be of the same substance."

From the floating lines and aerial chariots of the Spiders which make Gossamer, let us descend to a few of the humbler fabrics woven by the same and various other species, to serve as habitations or as snares.

Who is not familiar (too familiar for appreciation of their excellent workmanship) with the radiate wheel-like nets so common in gardens and on hedges throughout the summer, and on dewy autumn mornings rendered so brightly conspicuous by the liquid pearls which they serve to string? In addition to these borrowed gems, the spiral lines of geometric webs have been shown by the microscope to be beset by a number of viscid globules. The ingenious weavers of these "wheels within wheels," are various species of that tribe of Spiders called, from their lines and circles, the Geometric; those of them most commonly known are "the Garden" (*Epeira Diadema*) and "the Long-bodied" (*Tetragnatha extensa*), noticed already among the aeronauts. As with these, the first operation of our geometric spinner is to throw out a

floating line, which having caught on some convenient hold-fast, she strengthens with additional threads till it forms a strong cable of support, to which from various adjacent points she proceeds to add others, until an irregular frame-work is prepared for the radiated net which is to be hung within it. Using her own limbs as rule and compasses to measure the distance of its spokes and circles, she then constructs her geometric wheel, and when completed, most usually forms its centre with her body, still as death, but all eyes and ears and sentient feet, ready to spring on the first victim that enters her fatal maze. Occasionally she leaves vacant the centre of her net, but it is only to lurk hard by under a leaf or other covert.

In these wheel-like snares there is extreme diversity of size. Stretching across from tree to tree, we have seen them occupy the breadth of a broad garden walk, and have found others comprised within the narrow area of a single leaf.

Among the out-door fabrics woven by Spiders, which can hardly fail to attract the eye, however little they may fix attention, are those large white broad-sheets, sloping downwards into tunnels, of which numbers are so frequently seen spread out upon the grass and lower bushes. These webs, of which each serves a single occupant both as a residence and a snare, are attached by silken ropes to adjacent objects. The sides of the horizontal broad-sheet, sloping obliquely downwards till nearly perpendicular, form towards its centre a cylindrical tunnel, and

sitting near its mouth, the lurker, shaded by the darkness of her covered way, is ready to rush forth and seize on the first hapless wanderer that becomes entangled in her fatal web. This cunning artificer can only be captured by the artifice of getting behind, and driving her upwards and out of her tunnel, into which she always descends upon the first alarm.

In addition to the silken material of which they always carry with them an internal magazine, there are various out-door Spiders which employ leaves in the construction of their retreats, and that after a fashion both ingenious and elegant.

We have sometimes plucked a rolled up lilac or young oak-leaf, expecting to find it tenanted by a leaf-rolling Caterpillar, when, lo! upon the scroll being opened, out ran a small long-bodied Spider, which, after lining it with silk, had taken possession of it as his cell. Structures more spacious, consisting not of one, but of several leaves lined and united by a silken web, serve often for the abodes of various Spiders found in woods and gardens; but of these, few are so curious and elegant as a single-leaf cell which we have often found on nettles. In this the point and sides of the leaf being turned over so as to meet at the edges, are conjoined with silk, and on carefully forcing up one of the corners of the green triangle, we intrude on the domestic privacy of a maternal Spider, keeping tender watch over her bag or ball of eggs.

Everybody must have sometimes noticed (both within doors and without), a spider thus brooding over a ball usually bigger

than her body, with which, on alarm, she makes off with all possible expedition. These balls, popularly known as Spiders' eggs, are in fact made up of a numerous group of them, enclosed within a woven envelope; and the way in which these spinning mothers proceed to

“tie” their “treasure up in silken bags,”

is another very curious exercise of their weaving art. Using her own body (after the manner of a nest-building bird) as a measure for its circumference, the spider spins, first, the lower half of her intended covering, which in this stage of its progress resembles a cup or nest. She then proceeds to lay her eggs, and over these, when piled up within, weaves a convex cover which, united with the receptacle at bottom, renders the ball complete. These silken egg-purses vary in colour; those of the House-Spiders being white, of the common Garden yellow, of other out-door species blue or greenish.

In form they are usually globular, but variations from this shape are occasionally met with. Last summer we noticed an exceedingly pretty one in the instance of a small greenish Spider, variegated with white, of which we found many on the leaves of a wall plum tree, keeping watch and ward over their nests. These, which were attached to the under side of the leaf, were white, and of an elegant urn-like shape, something resembling the seed case of a poppy. Round the circumference of the top or cover, were five, and in other specimens, seven points, another rising pyramidically from its centre.

We have, as yet, said nothing of the toils of the common House-Spider, but so secretly and slyly does that “cunning artificer” ply her craft, that some of the most clever naturalists have been puzzled, and are still at fault, as to the precise manner in which she goes to work. One* has declared that she can “weave the warp, and weave the woof;” but, as observed by another,† if she ever possessed, she has, in these modern days, forgot this process in her manufacture. When, in commencing her horizontal fabric, she desires to stretch her first line from wall to wall across her chosen corner, it would appear that she walks round the intervening angle, carrying in one of her claws the end of her thread, which has been previously fixed,—a mode of proceeding, supposed by Rennie to be requisite on account of the horizontal position of her net, which could not be ensured by allowing its first line to be fixed at hazard, as with those shot out by the weavers of Gossamer.

Numerous other Spider-wrought fabrics, as varied in shape and texture as in their process of formation, and intended for snares, for habitations, or for egg-nests, are constructed by the hairy-legged spinners of our native island; but perhaps we must look for the deacons of their craft amongst those of foreign extraction. None, for instance, of our Arachnean artificers at present known, are able, we believe, to compete with the marvellous skill of the Mason Spider of the tropics

* Homberg.

† Rennie.

and of Southern Europe, which to the mouth of its retreat (an excavated subterranean cell, tapestried with silk), contrives to adjust an earth-kneaded door, hung upon a silken hinge, and self-closing with an elastic spring, after each entrance and exit of the cavern's occupant.

For description in full of this foreign master-piece of Arachnean architecture we must refer to other pages,* and pursuing the main purpose of our own, invite attention to the constructive skill of one more native Spider.

Who has not seen, or is not curious to behold that "lion" of the Polytechnic, the diving-bell? Now those who for lack of opportunity are among the latter, may see a diving-bell in miniature by repairing to the brink of some running stream, canal, or ditch (provided it be not stagnant), in the neighbourhood of London or elsewhere. There they may perceive, shining through the water, a little globe apparently of silver, which surrounds, as with a garment, the body of a Diving Spider,† whose submerged habitation and curious economy have been described, as follows, by different observers. "These Spiders," says De Geer, "spin in the water a cell of strong closely woven white silk, in the form of a diving-bell or half a pigeon's egg. This is sometimes quite submerged; at others partly above the water, and is always attached to some objects near it by a number of irregular threads. It is closed all round, but has a large opening below, which however I found closed on the 15th of

* See Insect Architecture. † Diving Water-Spider, *Argyroneta aquatica*.

December, and the Spider living quietly within, with her head downwards. I made a rent in this cell and expelled the air, upon which the Spider came out ; yet though she appeared to have been laid up for three months in her winter quarters, she greedily seized on and sucked an insect. The male, as well as the female, constructs a similar subaqueous cell, and during summer as well as winter.” One of these spiders was kept by Mr. Rennie several months in a glass of water, where it built a cell half submersed, in which it laid its eggs.* These are enclosed in bags of yellow silk and are hatched in summer.

But it is in the pages of Kirby and Spence that we find the habitations and habits of this amphibious architect most strikingly and pleasantly described.† “Her abode (say they) built in water and formed of air, is constructed on philosophic principles, and consists of a subaqueous, yet dry, apartment in which, like a mermaid or a sea-nymph, she resides in comfort. Loose threads, attached in various directions to the leaves of aquatic plants, form the framework of her chamber. Over these she spreads a transparent (elastic) varnish, like liquid glass, which issues from the middle of her spinners ; next, she spreads over her belly a pellicle of the same material, and ascends to the surface” to inhale and carry down a supply of atmospheric fluid. Head downwards, and with her body, all but the spinneret, still submersed, our diver (by a process which does not seem precisely ascertained) introduces a bubble

* Insect Architecture, p.366.

† Introduction to Entomology.

of air beneath the pellicle which surrounds her. "Clothed in this aërial mantle, which to the spectator seems formed of resplendent quicksilver, she then plunges to the bottom, and with as much dexterity as a chemist transfers gas with a gas-holder, introduces her bubble of air beneath the roof prepared for its reception; this manœuvre is ten or twelve times repeated, and when she has transported sufficient air to expand her apartment to its intended extent, she possesses an aërial edifice, an enchanted palace, where, unmoved by storms, she devours her prey at ease." Fancy-woven from the foregoing description is the Fairy Tale which forms the subject of the next episode.



"All seem bent upon ascension."



THE FRESH-WATER SIREN.

Part the First.

“My air-built bower come and see,
“Stranger, come and dwell with me.”

An armour-clad Rover is sauntering near ;
At the Siren’s sweet accents he pricks up his ear :
“Gramercy !” quoth he. “She bespeaketh me kind,
“And to pay her my devoirs I’ve almost a mind,
“If saint or if sinner would show me the road
“To this good-natured damsel’s *al-fresco* abode.”

Then he looked at the water, exploring it through,
And there, if his sight brought him evidence true,
He beheld 'neath its surface, in silver bedight,
A most lovely Ladye. No gallant young Knight
Could wish for a fairer in air and in mien,
Tho' as to her face, not a feature was seen,
'Twas so veiled in the blaze of her mantle's bright sheen. }
Again, sweetly she sang: "See my water-girt home!
"Come down to my palace of pleasure, oh, come!"

But the Knight he stood dubious, the streamlet was deep,
He prudently looked, ere he ventured to leap;
But the Ladye, impatient, upraised neck and hand,
To grasp hold of his, as he stood on the land.
Then, ye powers of darkness! the sight that he sees,
Any mortal's warm blood was sufficient to freeze,
Though boiling beneath a fierce tropical sun,
Or on Lawrence's gridiron very near done.
The most blear-eyed of-witches, the nightmare most foul,
The most grim of hobgoblins, the loathsomest ghoul,
Would have seemed as the fairest of Eve's lovely daughters,
To the horrible thing half raised out of the waters.
Its long hairy arms, so gaunt, rigid, and thin,
Were as dark and as dry as an old mummy's skin:
Its eyes, glassy and fixed as a fish's when dead,
Glared fiercely like fiery coals in its head,

And like lamps were hung over its horrible jaw,
The port-cullis that led to its cavernous maw.

The grim-looking spectre but rose as a flash
That blasted the vision, then sank with a splash ;
And, enwrapped in her mantle of magical light,
Once more seemed a fairy all beauteous and bright,
Save only the hand raised the water above,
Which still circled the wrist of the warrior's glove.
This wight (and a fortunate hap t'was for him)
Was not framed like us mortals in body or limb ;
'Neath the back of his glittering corselet lay hid
(Like Jack-in-the-box crumpled under his lid,)
A pair of transparent and powerful wings,
Could be folded and opened by wonderful springs.
From all that he'd seen, he'd a pretty good notion,
That now was the time to set them in motion ;
So, his hand snatched away without further ado,
Wide open the plates of his corselet he threw,
And a moment beheld him high poised in the air,
Looking down with a smile on the Siren's despair,
While uprose from the water her soft witching strain,
Sung sweetly as erst, though, I wist, now in vain :—

“ My air-built bower come and see !

“ Come, stranger, come and dwell with me ! ”

“By my fay,” quoth the Knight, “I’ve beheld quite enough,
“And as for your bower, ’tis all a mere puff!
“I’d only advise you, when next you’d deceive,
“To keep to your element,—so take my leave!”

With a shriek of despair, the witch rose up once more,
Looking (though it was hard) still more grim than before;
Then she sank with a splash, like a ponderous stone,
Disappeared at the bottom and muttered a groan,
Mumbled many a curse on the gallant winged rover,
Crouched in dolorous rage till her spleen was gone over;
Then determined her twig to redaub with new lime,
And not suffer her bird to escape the next time.

Part the Second.

On the day of her birth,
Or on that of the earth,
Or on some such grand anniversary,
Queen Nature made sport
With the dames of court,
And the bairns of her royal nursery.

From a gilt-edged cloud,
The lark sang loud,
The fish were in extasy leaping;

Each leaf danced light
In the sunshine bright,
And none but the owls were sleeping.

All animate things,
With responsive strings,
Then abroad on the sunny earth,
Unless by age rusted,
Or trouble encrusted,
Were as harps in the hand of mirth.

With the rest of the revellers a young Gallant gay,
Right proud in the gloss of his silken array,
By the glistening water was sauntering along,
Now cutting the rushes, now humming a song ;
Careless of all,—if he had known a care,
'Twas the loss, t'other day, of a treacherous fair ;
He had merrily whistled her down the wind,
And now 'twas heigh-ho ! but another to find,
Black or brown, red or blue, if of feminine gender,
All other enchantments the season would lend her.
Looking blithely about him, around and around,
In every direction, except on the ground,
Our gay Gallant stumbled,—now guess ye on what ?
On viper, or toad, or a sherd of a pot ?—

His hair bristled with fright, with fear dropped his jaw,
 Yet he'd trodden on naught save a feminine paw,
 Hairy and black, and armed with a claw. }

Squatting, toad-fashion, amidst the sedge
 Which divided the path from the water's edge,
 Sat our former acquaintance, the baffled crone,
 Now wearing no semblance excepting her own ;
 From bottom to top, from one end to the other,
 Unveiled to the sight—well I wot, such another
 Was not to be seen on that fine summer's day,
 When all wore their best faces and brightest array.
 There again were the arms, so long, hairy, and spare,
 The fiery fixed eyes with their horrible glare,
 The mis-shapen head, with a great corporation,
 Whose members were wasted to attenuation.
 Oh ! well might our Gallant's heart quiver and quake,
 Well might his limbs like an aspen leaf shake,
 Well his jaw it might drop, well might bristle his hair,
 As the loathly old creature bespoke him thus fair :—

“Courteous Sir, why this alarm ?
 Fear no hindrance, dread no harm ;
 I'm a gentle Fairy Sprite
 For beauty famed,
 The Peerless named,
 Suffering under foul despite.

“In an unpropitious hour,
A jealous Fay of greater power,
Enwrapped me in a magic spell;
Hid beneath this streamlet deep,
Where water-elves their revels keep,
For a space I’m doom’d to dwell.

“Or if I rise to upper air,
My proper form, so bright and fair,
Assumes this strange and hateful guise;
Now, if you doubt the words I say,
As (woe is me!) perchance you may,
Then, gentle Sir, believe your eyes.”

As she uttered these words, sliding off from the bank,
The ill-favoured thing like a crocodile sank;
And then in a trice, her form shrouded in light,
In a silvery mantle which dazzled the sight,
Again she uplifted that sweet siren strain,
So oft she had sung and, of late, sung in vain:—

“My air-built bower come and see,
“Come, stranger, come, and dwell with me!”

As she warbled, our Gallant’s unused trepidation
Gave way to a species of queer fascination,

He gazes, debates.—Is it far beyond credence,
That the witch's fine tale obtained something like heedence,
When hundreds jump into some Lake of Killarney
With no witchery at all, save some fair Katherine's blarney?
Oh! 'twas then for some raven to croak in his ear,
Or *one* crow, boding sorrow, to flap her wings near.
But alas! in that hour of revel and rout,
Not an ominous thing was seen lurking about;
One more dubious look on the water he cast,
One look on the sun—that look was his last!
Underneath the bright water, and 'neath the bright sun,
A most horrible deed on that day was done;
The blue streamlet put on a deep rubicund dye,
And the fishes felt qualmish, they could not tell why.

Part the Third.

Fast as acorns in autumn fall into a pool,
In the Siren's receiver dropp'd many a fool;
I wot, those that got in, were ne'er known to get out.
But by tongues in the air it was bruited about,
That a beauteous enchantress who lived upon flesh,
Was the fowler that caught these young birds in her mesh.
The place where she lurked, none exactly could tell,
Though many looked wise, just as if they knew well;

And others said, waking or else in a dream,
They had seen something float in the crystal stream.
Thus the Siren's abode, or its neighbouring location,
Obtained by degrees but a sad reputation :
Yet the beldame found out, (a fact prov'd in society,)
That there's nothing so gainful as bad notoriety.
Her decoy overflowed,—where she caught one before,
Well I ween she would now lay hold of a score.
From old and from young, from high and from low,
From widows in weeds, and from maidens in woe,
There now daily arose such a shrill lamentation,
That it entered, at length, the long ears of the nation.
The deputies meet— vent a torrent of pity ;
And their eloquence spent, they appoint a committee,
To sit on this cockatrice egg of affright,
And try if they could'nt bring something to light.
It might seem a hard task information to glean,
On what people knew nought of, and scarcely had seen ;
Yet of witnesses numerous, I wot, was no lack,
And of evidence ample to break a mule's back.—
Strange ! the mystery remain'd without further solution ;
But then the committee pass'd this resolution,
(A wonderful judgment carried nem. con.)
That the parties yet absent were certainly gone ;
To which an amendment was finally carried,
That they'd not have been lost, if at home they had tarried.

After all, there were gentlemen miss'd as before,
And the water-witch throve as she'd thriven of yore.
But 'twas vain now for wives of bereavement to chatter,
For the senate declared, having sat on the matter,
That the grievance in question was certainly crushed,
And that all future murmurs must therefore be hushed.

But cheer up, all ye widows, (whose loss is no gain,)
A champion is near to avenge all your pain !
Cheer up, wives and maidens, dismiss your alarms !
Not long the foul Siren shall work her fell charms :
Look not down to the earth—but look up on high,
Your deliverer comes cutting athwart the blue sky !

On light sprays hung,
By silk cords slung,
O'er-arched by a silken dome,
Is the airy hall,
With water-proof wall,
Where the Siren makes her home.

By a waving screen
Of emerald green,
Her bower is girt about ;
But a lucent gleam
From the sparkling stream,
Looks in from the world without.

For a river sprite,
Or a naiad bright,
'Twas fit—for a fairy queen—
Nay, that pendent cell
Might have suited well,
For the boudoir of sweet Ondine.

In this nice little snuggerly sat the witch crone,
Deep immersed in the sweets of a large marrow-bone ;
In the mill of her jaws it went crunch, crunch, crunch,
As the juices flowed out, she went munch, munch, munch.
Little dreaming that trouble and danger impended,
She took her siesta when dinner was ended ;
No company present, she knew, but the dead,
In perfect composure she nodded her head.
Thus she sat till the moonlight with fitful gleam,
Peered in thro' the glass of the crystal stream :
Here it shone on a bundle of skulls pick'd bare,
There it fell on a tissue of tangled hair,
On a fragment glanced of some knight's bright armour,
Who had fallen a prey to the treacherous charmer ;
And the moon-light gave all a sepulchral hue,
Through the waving green as it flickered through.

The foul creature starts—in a tremor awakes ;
Is it the wind that too boisterously shakes

The tremulous cords of her water-girt dome,
Or is it the voice of her crimes coming home ?
She looks up in affright, through a fearful chasm,
(’Twas enough to bring on quite a nervous spasm,)
Down comes the water rushing and roaring,
From the roof of her cell in a torrent pouring.
But since witches can swim, what in this to appal ?
Why, perhaps, no great deal, but this was not all.
Riding down on the wave, like a ship in a gale,
The bright moonbeams illuming his coat of mail,
Came the winged knight she’d once thought of entrapping,
And who now, in return, had just caught her napping.
“At last, at your bidding, I’m come, dame,” quoth he ;
The Siren looked blue, but no word spoke she ;
Then they meet—in as loving collision, I trow,
As when flint strikes on steel, or fire falls on tow.
For the hub-bub around them they care not a rush,
The waters may roar, and the waters may gush ;
The once air-propp’d dome all to pieces may shiver ;
Then, struggling, they rise on the breast of the river.
The knight swam like a drake, the witch like a duck,
Or the Old One’s dam ; but the Old One’s own luck
Will now and then fail, like the luck of a sinner,
And the witch by *ill* luck had made too good a dinner ;
Indigestion, surprise, and some sickening alarms
Of terror-struck conscience, unnerved her strong arms.

Her foul bloated body now sank and now rose,
While (a scratch for a thrust) she returned the hard blows,
That came pattering like hail on her tough old hide,
As her mail-clad opponent his falchion plied.
Till the moon had gone down did the battle last :
When the game was up, the beldame was cast.
As a Siren, she troubled the world no more,
But a charmed life (by worse luck) she bore,
And with small change of manners, and little of feature,
Was transformed to a Spider, a dark cunning creature,
That beneath running waters constructs a dry cell,
Where through summer and winter she's wont to dwell ;
While the knight 'gainst whose prowess her sorceries failed,
Is the "Great Water Beetle," amphibious and mailed.

Ye lovers of marvel and fairy lore,
Say not that the days of enchantment are o'er,
That the well-springs of Fancy and Fable fail,
For they water the realms whence we've drawn our tale.
There are streamlets yet where the river-sprite
With his Harlequin changes bewilders the sight ;
There are castles yet of ivory and gold,
Hung with floral fabrics by sun-shine unroll'd,
Within whose luxurious recesses recline
Fays of exquisite form, quaffing exquisite wine :

Some in gossamer veiled of ethereal dyes,
Which have only their match in the rain-bow'd skies ;
Some in richest and softest of velvets arrayed,
Or in mail that does shame to the armourer's trade.
These are haunting us ever for ill or for good,
Through earth and through air, field, forest and flood :
To transport our thoughts, as by magic spell,
From the sordid objects whereon they dwell,
To a land of the Marvellous dimly displayed,
Where the light-winged Fancy, by wonder stayed,
Still delighteth to hover, and joyously say :—
“ Oh ! my darling elves, ye're not chased away
“ There's a region still where ye have a place,—
“ The mysterious world of the Insect race.”



Her mail-clad opponent his faldion plied.



USES OF INSECTS.

“ Let no presuming impious railer tax
Creative wisdom, as if ought was form'd
In vain, or not for admirable ends.”

LEIGH HUNT tells us, in his *Indicator*, that an Italian Jesuit, Giulio Cordara, has written a Poem upon Insects, which he begins by insisting that “those troublesome and abominable little animals” were created only for our annoyance, and that they were certainly not inhabitants of Paradise. Now we scarcely know what to think of the good Father’s notion, except that it was hatched, probably, under a swarm of Mosquitos, or under dread of Scorpion or Tarantula. ’Tis certain that the

flowers even of Paradise, must have wanted a charm without the basking Butterfly and humming Bee; while, on the other hand, we can hardly imagine the leaves of Adam's garden ever to have been gnawed by tooth of Caterpillar, or that "the worm i' the bud" ever preyed on the unexpanded cheeks of his damask roses; still less, that the fair fingers of our common mother were ever, when employed to cull or train them, in danger of being wounded by the poisoned dart of a Bee lurker. We have, indeed, the authority of our mighty Milton, for supposing that across the threshold of Eve's bower, where

"——— Underfoot, the violet,
Crocus, and hyacinth, with rich inlay
Broidered the ground—more coloured than with stone
Of costliest emblem—other creature there,
Beast, bird, insect or worm, durst enter none :
Such was their awe of man."

But from this it must not be inferred that their entrance would have been dangerous, but that their absence was essential to the strict retirement of that "blest retreat." To meet then the supposition, that nothing save what was gentle and uninjurious existed before man's fall, we must needs conclude, in harmless speculation, that the first Butterflies (knowing no Caterpillar youth) were created Butterflies from the beginning, to sport over roses without thorns, and that the first race of Bees were formed stingless, to collect their nectiferous harvest from "Cassia, nard, and balm, that wilderness of sweets" without a bitter. A Bee without a sting is not, by-the-way,

even now a creature of imagination : Huber, their celebrated historian, having received a present of some such from Mexico. Constituted thus of harmless nature, we may suppose the earliest use of Insects, like that of birds and other creatures, to have chiefly consisted in the forming, each according to its measure and degree, various fitting receptacles of that life and happiness, which it was then (as now) the great purpose and pleasure of their Creator to bestow. Filling their assigned place in the book of Nature, they were also, no doubt, made to perform an essential part in the divine instruction of our first parents.

Spite, therefore, of our Jesuit's flea-bitten theology, we may fairly infer, that amongst the creeping and flying things of first creation, Insects were included, and that the "vernal airs" of Eden were no "desert airs," for lack of a glittering multitude of ever joyous sporters in the sun and shade. Even for uses economic, who can say but that in addition to

"——Fruits of all kinds, in coats

Rough or smooth rind, or bearded husk or shell,"

and "juice of grape," and "dulcet cream of almonds," the grassy breakfast-board of Eve might not have been furnished with honey purer than was ever collected in Narbonne or on Hymettus. Indeed, if honey was ever stored at all by the Bees of Paradise, it must have been rather for the use of man than for their own, since to amass a winter's provision, would have been labour lost in a clime where reigned "eternal

spring.” At all events, we read repeatedly of honey as secondary to milk alone amongst the flowing bounties of the Promised Land; and throughout the nations of antiquity, sacred and profane, the busy communities of Bees seem to have held in those of the human race, a degree of importance, which sufficiently attests their value as tax-gatherers on the vegetable kingdom.

And why were Bees “immortalised” in the verse of Virgil, except on the same principle as that which led man to deify his brother man? It was wholly for their usefulness, since there is little doubt, that, but for their important economic service, their own wonderful economy would have been as much overlooked, as it was misapprehended. Ants, it is true, with no such claim upon human notice, attracted it scarcely less, witness the ancient “records of their wars;” but these are comparatively recent, and it is likely that the marvels of Apian monarchies first led to observation of the ways and wonders of Pismire Republics.

Of the value of honey and its extensive use, we, in our own country and our own times, since the introduction of sugar, can have seldom perhaps entertained anything like a just notion,—a much lower estimate, at all events, than the Ukraine peasant with his 400 or 500 bee-hives, or a Spanish priest, possessor of 5000.

About the uses of wax, a word by-and-by; but with the aroma of honey in our nostrils, and its flavour on our lips, let us

think whether we are indebted to Insects for any other description of palative luxury. Why no, say those who have only lived and looked at home; but they who have been at Rome may tell us that snails are there commonly sold and eaten, especially as Lenten food. Well, but snails are not Insects: true, though they were once so considered; but we have only to go back to the commencement of the Christian era, and we shall find that while John the Baptist was subsisting in the desert of Judea, upon the simple and ordinary fare of "locusts and wild honey," imperial luxurious Rome was regaling, in her banquet halls, upon veritable Insects—luscious Caterpillar grubs, fattened on flour, as we fatten oysters upon meal. This was the Cossus of Pliny, and supposed identical with the unsightly wood-devouring larva of the great Goat Moth,—a lurid red and yellowish Caterpillar, bulky, black-headed, and black-clawed, a darkling dweller in the trunk of oak or willow, of which, in due season, we have much more to tell.

Again, without going back at all into remote ages, we have only to go east and west, north and south, into countries which now brought near by the power of steam, are remote no longer, and we shall still find men in daily commission of what to the narrow ken of prejudice, may seem the enormity of Insect-eating; thereto incited, in one quarter, by the caprice of Epicurean luxury, in another by the united pressure of indolence and scarcity. The two extremes of society, civilized and barbarous, are here brought together in one common habit. See, in the

West Indies, the French planter *gourmand* (and sometimes the English, as his copyist), seated at his luxurious table, oiling the hinges of his worn-out appetite with those lumps of insect fatness known as the grubs of the Palm Weevil; and then turn to the poor degraded Hottentot, squatted on the arid ground, swallowing, by handfuls, White Ants roasted, washed down by Locust soup, or just as often, too hungry or too indolent to dress them, devouring the uncooked Insects.*

But, after all, none can pronounce these *Acridophagi* or Locust-eaters, as monsters of singularity in their mode of diet. Was not "the Locust after its kind" expressly allowed for food by the Mosaic Law; and from the time of its institution even to the present, does not the law of Nature, ever kind and provident, permit this insect scourge of humanity to be converted into a medium of supporting human life? Since in all countries a prey to their ravages, in Syria, Arabia, Persia, Ethiopia, Egypt, and Barbary, locusts are still an article of provision, in more or less extensive use. And from what but prejudice arises our disgust at Insect-feeding? Our king Jamie, of pedantic memory, was said to have pronounced him "a vera valiant man" who first adventured on eating oysters, and truly we opine that he must have been quite as much a hero in his way, as the dweller in Surinam or the Mauritius, who first engulfed a fat Palm Weevil grub. Why should the Frenchman, wiping his mouth after Snail soup,

* Smeathman.

laugh at the Chinaman smacking his lips after a dish of Silkworm chrysalides? Shrimp-eaters as we are, why should we stare at the locust-feeding Ethiop or Arab, and why should he who has supped off roasted crabs despise a New Caledonian for seasoning his breakfast with a relish of roasted Spiders?

Instead of thanking our stars for our own discriminating taste, let us, then, rather thank Providence for that omnivorous appetite common to our race. Herein let us recognise a distinguished provision by which our brother man, when located in barren lands, or overtaken by accidental scarcity, is enabled to draw supplies from almost every department of nature.

We only marvel that Gastronomy (than whom even Necessity herself can scarcely boast a more numerous progeny of inventions and resources) should not, in the demand of her votaries for new modes, have been led to seek more frequently for new *matériel* out of the Insect Kingdom. This, however, may be reserved for some future time. Cockchafers and Chafer grubs may yet become articles for the London spring-market, and Patés de Sauterelles may yet have a place in second courses. The idea is not Utopian, neither is it new; for Dr. Darwin long ago recommended the former as a delicate addition to the list of *entremets*, and the Rev. Mr. Shepherd, who himself dared to venture on the thing unknown, pronounced the large Green Grasshopper to be excellent. And why not? Full of sweet vegetable juices, fresh imbibed, and in some cases, as in Aphides, scarcely altered, wherefore should Insects in the shape

of diet be viewed with abhorrence and disgust, and that forsooth, by coarse shamble-fed animals, living upon stall-fed oxen and sty-fed swine?

Insects once occupied a place as important as herbs in the list of sovereign remedies. To take a Wood-louse or Millepedes, perhaps, alive, and conveniently self-rolled for the occasion, was as common as to take a vegetable pill. Five Gnats were administered with as much confidence as three grains of calomel. In an alarming fit of cholic, no visitor with a dram of peppermint, could have been more cordially welcomed or swallowed than a Lady-bird. Fly-water was eye-water, and even that water-shunning monster, Hydrophobia, was urged to lap *aqua pura* by the administration of a dry Cockchafer. Like other dogs and drugs, these have all had their day in the world of medicine, but have left behind them that salutary biter, the *Cantharides* or Spanish Fly of Europe, and the *Meloe Chicorei*, used by the natives of the Celestial Empire for the same purpose of drawing off terrestrial humours.

When from inward remedies and regalements, we turn to outward adornments, we are instantly reminded of our obligations to those spinning millions,

“That in their green shops weave the smooth-haired silk.”

But stay! are we indeed debtors to those busy insect-artificers, who, by furnishing material for velvet robes and silken gowns and silken banners, have ministered so largely to the pride of the eye and the pride of life? May not the Silk-worm be

ranked rather among the dangerous than the useful gifts of nature? We think not; for assuredly, if Silk-worms and silk had never been, some other production, how coarse soever, would have served just as well to keep human vanity alive and warm. In ancient times, that light-winged passion nestled quite as snugly in the folds of fine linen, and the same fact is sufficiently attested by modern instances. To say nothing of *hand*-handkerchiefs, those laced and broidered abominations displayed by our countrywomen in token of a human infirmity, we may notice those curiously wrought stockings of Lisle thread (for which enormous prices have been given), and which prove clearly enough that the feet of Eve's daughters can be tangled quite as easily in vanity-nets of vegetable growth, as in those of the worm's weaving.

How entirely conventional has been the value attached to silk apparel, Montaigne gives us, in his Essays, a striking instance. Speaking of the worse than uselessness of sumptuary laws to restrain the luxury of dress, which, by making it an exclusive badge of rank, they rather tended to encourage, he recommends for the much more effectual repression of expensive indulgences, the adoption by princes and nobles of the simplest habits both of dress and living, which would then, forthwith, become the mode in most repute. In support of this position, he adduces the contempt into which silk dresses fell on the following occasion. "When," says he, "in consequence of the mourning for King Henry II., cloth was ordered

to be worn at court for a year, so low did silk fall in everybody's estimation, that whosoever continued to wear it, was set down at once as a low-born cit." In short, *les habits de soie* were entirely abandoned to surgeons and physicians.

Be it also remembered, that though "silken sheen" has been always considered by us of Europe an article more or less of luxury, in Asia it has been for ages one of absolute use. While at Rome, silk was valued at its weight in gold, and the Emperor Aurelian* refused his Empress a silken robe because it was too dear, the lean unwashed artificer of China was in some provinces clothed in his silken garment. To the latter country, under the name of *Serica*, has been attributed the discovery of weaving Silk-worm threads, whence the Latin *holo-sericum* or silken garment, of which the first is said to have been worn by the Emperor Heliogabalus.† In the days of Solomon, we are told, a woman named Pamphila of the Island of Cos, was skilled in the art of making cloth from this country of *Serica* or China. Du Halde says, that the most ancient of the Chinese writers ascribe the invention to one of the women of the Emperor Hoang Fi, named Silung, and so important was the discovery held, that all the women in the Emperor's Palace were employed in rearing the worms and weaving their productions. Nor, indeed, could the Chinese have valued silk too highly, either as an article of home use, or

* Emperor Aurelian, died A.D., 275.

† Emperor Heliogabalus, died A.D., 222.

as a very principal one of commerce, before it was cultivated and manufactured in other countries.

The eggs of the Silk-worm are said to have been first brought from India to Europe, about the year 550, by two monks, who having concealed them in hollow canes, introduced them at Constantinople, from whence they reached Italy. That country became then the grand European emporium for silk, both raw and manufactured. In the reign of Henry VI., there was a company of silk-women in England, but these are supposed to have been only needle-workers in silken thread : our supply of the broad manufacture not coming from Italy till 1489. About 1520, the French, with Milanese workmen, manufactured but did not cultivate ; and in 1547 silk, in France, was still scarce and dear. Its cultivation was introduced into that kingdom by Henri Quatre, contrary to the opinion of Sully. Our James the First was no less earnest for its culture in England, and in 1608 vainly urged it from the throne. Twenty years later, the silk manufactories of Britain had become very considerable ; these were further improved by French workmen driven hither by the revocation of the Edict of Nantes ; still more so, by the invention of the silk-throwing machine at Derby in 1719 ; and by 1730, we are told that even in Italy the English silks bore a higher price than the Italian. At the present time, although we import of silk goods very largely, we also export of the same even to countries which come in competition with our own. Our exports of these commodities

to France, Germany, and Italy, were estimated in 1843, at the value of near £200,000, and in 1844 the quantity of raw silk consumed, at 4,431,812 lbs.

Silk, of late years so considerably cheapened, will doubtless be soon further reduced by our new relations with the Celestial Empire, and our present system of unrestricted trade. Who can tell but that silken gowns, lowered as they already are to within the tip-toe reach of the Million, may not, when yet more accessible, be fairly trampled on by the aristocratic few?

As connected with outward apparel, as well as various other arts of ornament, our next obligation to Insects is for dyes. Cochineal, which until the year 1694 was believed in Europe to be a seed, is now known, by putting a few grains in warm water, to be an Insect, a Coccus or wingless Beetle, something resembling in form those commonly found on the leaves of grape-vines and of the hawthorn. It is a native of China and other parts of Asia, where the nopal or the prickly pear on which it feeds, is indigenous. Of the great importance of this Insect production as an article of commerce, we may form an idea from the recorded facts, that the East India Company offered a reward of £6000 for its introduction into India, and that some years ago the annual consumption (probably much increased) in Great Britain alone was reckoned at 750 bags, worth £375,000.

Another species of Coccus, found on the evergreen oak in

the south of Europe and Asia, has furnished from the earliest ages a blood-red crimson dye, supplanted now by the Cochineal. It was known to the Phœnicians under the name of Tola; to the Greeks under that of Coccus; to the Arabians and Persians under that of Kermes or Alkermes. Kirby suggests that this was the dye probably used for the Tabernacle curtains: then, serving for awhile to heighten the Pagan splendors of Greece and Rome, it returned once more to sacred uses, in the scriptural figures of the Brussels and Flemish tapestries.

Lac (called either stick, seed, or shell-lac, according to its state of preparation) is the secretion of another sort of Coccus found on various Indian trees, and is used also as a red dye, but more extensively in varnishes, japan, and sealing-wax.

An African species of Mite is also used as a dye, from whence it has been suggested to try for the same purpose that brilliant little Insect, the scarlet-satin Mite, so common a frequenter of our gardens in early summer.

But of all Insect productions, none perhaps is more useful, none certainly more interesting, than wax. The little Bee herself might verily become inflated with self-importance could she be aware of the exalted and varied purposes to which this product of her labours is applied by man. How greatly is the religious pageantry of the Roman-catholic countries of Europe and America, indebted for much of its splendor, and for more than half, perhaps, of its influence on the mind (dazzled through the eye), to the giant tapers of their sacred edifices, each the

tribute of a thousand flowers, collected and transmuted by a thousand Bees. Of all substances for the illumination of holy fanes, wax certainly is the most appropriate—so sweet, so pure, and, in its origin, leading back the thoughts to beautiful fields and groves and gardens. But through the groves, which were “God’s first temples,” the intercepted sunbeams cast but a “dim religious light;” neither perhaps in temples made with hands, is an excess of illumination most in harmony with meek devotion, when, from the spiritual darkness within and around, (best typified by a measure of surrounding gloom,) it would humbly look upwards towards the source and centre of all light, created or revealed. In the halls of festive splendour, no less conspicuously though less appropriately, shines the produce of the Bee’s rustic labour. Or walk we along the streets, or enter the lounges for amusement, does not waxen imagery, from the shaven Blue-Beards and pink Fatimas of the barber’s window, to the noted and notorious of the earth, the monarchs and the murderers of Madame Tussaud’s show, remind us of the busy Insects, who were the first workers of the plastic paste. Nor, among the curious works of art, whose basis is this work of nature, must we overlook the waxen flowers which, in their fadeless bloom and exquisite imitative beauty, bring a garden (in all but perfume) within the walls of the Pantheon. This is an interesting as well as elegant use of the rifled riches of “buds and bells,” thus paid back by perpetuation of their fleeting loveliness. It is needless to enumerate a variety of

other uses to which wax is applied, for they are every where apparent ; even in the comfortless dry-rubbed floor of the French hôtel or château, and the single mahogany table (valued heirloom of the English cottage), wherein the housewife is furnished by the Bee's industry with a mirrored reflection of her own.

Sealing-wax, as at present manufactured, is only wax in name, being composed of gum, or shell-lac, and turpentine, coloured with vermilion ; but in former times it was wax in nature, and even now the great seal of the Lord Chancellor, and others of official use, are of veritable wax.

Shakespeare's Imogene, when opening her husband's letter, is made to say,

“ Good wax, thy leave.—Blessed be
Von Bees that make these locks of counsel ; ”

and in the next century, Fuller thus speaks of wax and its uses :
“ This is the cask where honey is the liquor, and being yellow by nature, is by art made white, red, and green, which I take to be the dearest colour, *especially appendent on parchment*. Wax is good by day and night, useful in law instruments to seal, and in physic. The ground and foundation of all *cere-cloth* (*cera*) is also made of wax.”

Much more extensive and important than any of the foregoing, but, as less palpable, even more disregarded, are the general uses of Insect existence. Disease engendered of corruption in substances animal and vegetable, would defy all the

precautions of man, unless these were aided by scavenger Insects, those myriads of Flies and carrion Beetles, whose perpetual labours even in our tempered climate, but infinitely more so in warmer regions, are essentially important to cleanliness and health.

A use of this nature, and one performed perhaps to an extent we little think of, is the purification of standing waters by the innumerable Insects which usually inhabit them. We have witnessed ample proof of the efficacy, in this respect, of Gnat Larvæ, when keeping them to observe their transformations. Water, swarming with these “Lives of Buoyancy,” has been perfectly sweet at the end of ten days, while that from the same pond, containing only vegetable matter, has become speedily offensive.

As commissioned agents, ministering more or less directly to our various pleasures, we owe no slender obligation to Insects. Besides imparting variety and animation to summer scenes by their “ceaseless hum” and endless diversity of form, they assist in the support of most of our favourite songsters of the garden and the grove. The red-breast, the wren, and the titmouse live almost wholly upon worms and Insects, which also serve the black-bird and the thrush as meat before a fruit desert. To the delicacies of our tables they are also indirect contributors. Our game grows plump on the nurselings of the Ant-hill,—the larvæ and pupæ improperly called eggs. Our fish fatten on “the Fly” in all its varieties; and even

our poultry thrive all the better, especially ducks and turkeys, for a sprinkle of Caterpillars, Flies, and Spiders, as a relish with their ordinary food.

The aid afforded by Bees and other Insects in the propagation of various flowers, by conveying on their hairy backs the pollen of one to the stigma of another, is no secret to the botanist, and gardeners know something, and ought to know still more, of the value of certain tribes of insect-eating Insects as checks upon the vegetable ravagers of their own race. Both the gardener and the hop-grower would find it worth their while to keep up standing armies of Lady-bird red-coats against the Aphis legions which ravage their plantations and parterres. Lace-winged Flies and Syrphus Grubs are worthy of all encouragement for the same important service, and, as remarked by Scuthey, the more Spiders in the stable the less would horses suffer from the Flies.

But neither from the above nor from any other known benefits, are we to measure the usefulness of the Insect creation as connected with other orders of being. A remark of Curtis on the apparently superfluous productions of the vegetable world is equally applicable to those of the Insect kingdom. Speaking of a certain water-grass (*aira aquatica*), very common in boggy meadows and found to be entirely useless for cattle, he justly observes, that "we ought not to look on this or any other plant as made in vain, because we do not immediately see its purpose. This grass is plucked by various water-fowls, and no less than

five species of Flies (*musci*) were produced from a few handfuls of its seeds, which, when I gathered it, were doubtless in the chrysalis state. How little do we know of nature's productions!"

We have already pointed out the utility of Insects, in affording ever new subjects of interesting inquiry. And let those who will, look scorn upon our pursuit, we repeat that few, when followed aright, are more adapted to improve the mind. In its minute details it is well calculated to give habits of observation and of accurate perception, while as a whole, the study of this department of nature, so intimately linked with others above and below it, has no common tendency to lift our thoughts to the great Creative Source of being,—to Him, who has not designed the minutest part of the minutest object, without reference to some use connected with the whole.



"The Locust after its kind."



ON APHIDES.

“A feeble race, yet oft
“The sacred sons of vengeance.”

BUT what sort of insects are Aphides? demands perhaps a reader who is no entomologist. In plain English, they are Plant-lice. But what are Plant-lice? is the question put by another who is no observer of nature. Let us inquire in reply, what is a Wasp, a Spider, a Butterfly? Did you ever happen to notice one of those remarkable creatures? Well then, we can tell you that for every single Butterfly, you have seen a thousand Aphides, and for every score of Wasps, a million of

Plant-lice. Not only have you seen, but scarcely a summer's day has passed without your having destroyed them by dozens. Your foot annihilates them on the grass. They die by your hand on almost every flower-sprig you gather; and with every vase of sweets which you place upon your table, you consign them, without a thought, to the bitter death of famine: so important and fatal is the influence which you, and everybody, are continually exercising over the destinies of *Aphis* existence, little as you would seem to know about it; although, perhaps, you may be better acquainted with it by sight than you are by name. However blind from indifference to the minutiae of nature, have you not often, when about to pluck a rose-bud or a piece of honeysuckle, almost started to find the one a green mass of moving life, the other with leaves green no longer, but turned black to the eye, and clammy to the touch? You perceive, in short, that what most people call a "blight," but what naturalists only look on as a swarm of *Aphides*, has been busy with your flowers before you, and turn away disgusted, to seek for less contaminated sweets.

To keep however to our blight Insects, call them what we will, be it here noted that the popular belief concerning their origin has of late years been assigned a place among popular errors. That

When the wind is in the east
'Tis neither good for man nor beast,

is an ancient saw too well supported by the "modern instances"

of cough, lumbago, catarrh, and rheumatism to be disputed; but in common with other things and persons of ill repute, the treacherous East would seem to bear the burthen of other sins besides its own. In addition to the above acknowledged evils,—that “Death in the air” which would seem to be really borne upon the wings of this malicious wind,—it is popularly accused of bringing “Life in the air,” but in a form which to the vegetable creation is quite as fully fraught with destruction, as are to the animal its poisonous invisible arrows. Besides these, and almost as impalpable, myriads upon myriads of Insect eggs, or as some have it, minute Insects, are supposed to float in the blighting atmosphere, whence, falling in showers on the verdant face of nature, they soon become visible in the shape of our *Aphis* marauders, or of leaf-destroying caterpillars. With the fact, however, that Insect eggs are heavier than water,* the notion of their floating through the air is not quite accordant; or granting that they float, from whence they originally came, is still the posing question: a question best answered, perhaps, by the plain and probable inference (adopted by Rennie and other naturalists) that neither our blight Insects, nor their eggs, have ever been aerial travellers; but that from innumerable minute eggs, laid in autumn on the trunks or branches of tree or shrub, or upon some adjacent objects, they emerge almost simultaneously in spring. Their amazing number is sufficiently accounted for, when we find by the cal-

* Rennie, *Insect Transformations*, p. 16.

culations of Réaumur, that one Aphis may be the progenitor of 5,904,900,000, descendants.

The above, which is the least difficult method, certainly, of accounting for the presence of these Insect swarms, would seem also the most easily ascertainable; yet the popular theory of their being wind-conveyed has had its advocates among the learned, as well as its believers among the simple. Nor indeed is it very unusual for learned theorists to go far and wide, and high and deep, in search of truths which, in nine cases out of ten, they could scarcely have failed to discover, by looking a little more closely into the things on which they are pleased to speculate.

Now suppose we do this with the leaf-buds of a rose-bush, which, early as it is, we shall find already occupied by Aphis tenantry, such as have recently emerged from minute black eggs, deposited last autumn on the branches. These are all green, of small size, and without wings, but later (towards the end of May) a single flower-bud is likely to present us with two or three kinds of these infesting sap-suckers, differing in size, form, and colour. We shall, therefore, venture to anticipate the appearance of summer rose-buds, and, with them, that of the numerous descendants which are sure, by that time, to have sprung from the race of Aphides now in being—not, as these, from the egg, but after the manner of viviparous animals. This may seem a strange anomaly, but there are things to tell of Aphis economy stranger still.

Now for our blight-disfigured rose-bud, which, instead of encasing green and bursting red, displays nothing but a moving multitude—a conglomeration of Plant-lice, which, taken *en masse*, is certainly no pleasing object. For all this, the little winged animal which, as being more conspicuous than the bulk of its fellows, we shall first single from among them, is no inelegant specimen of nature's Lilliputian workmanship. It has a plump shining body of deep bright green, spotted at the sides with black; long slender legs, inclining to reddish, and, like a bamboo reed, marked at every joint with black or darkest brown. The shoulders, head, and long jointed antennæ are also chiefly black, as well as two diverging spikelets proceeding from the back; while a pair of ample wings, much longer than the body, rise erectly over it.

This pretty insect, and those which resemble it, look like the aristocracy of the wingless multitude by which they are surrounded; and though we cannot pronounce their pinions to be borne as badges of rank, we believe that no reason has, as yet, been assigned with certainty for the partial distribution among *Aphis* tribes of the organs of flight, which do not with them, as with various other insects, serve as a distinction either of age or sex. A cause, indeed, which, if true, is most curious and interesting, has been assigned for this difference of endowment among Aphides. It has been supposed to depend on the quality and quantity of nourishment within their reach: those which in this respect are well provided on

juicy luxuriant shoot, being wingless ; while those on a dry and sapless branch, are gifted with pinions to waft them in search of better provender. Supposing this idea to be correct, we have herein another striking instance, added to the many, of providing care in that Power which careth for all, and adapts for all the means to the exigence.

If we examine, now, the wingless multitude—the *canaille* of our rose-bud—we shall find that the individuals which compose it have shorter legs and flatter bodies than their winged superiors, and that they differ exceedingly in size from one another. For the most part their colour is a light green, though some are of a pale red ; but however else they differ, all, both winged and wingless, are furnished with one remarkable appendage common to the whole Aphis tribe, to whatever plant peculiar, from the lordly oak to the lowly briar. This is the *haustellum*, trunk, or sucking-pipe, appended beak-like to the head, and which, consisting of a tube both pointed and perforated, serves the double purpose of piercing the leaf and sucking its juices.

The pipes of these our little ravagers of the rose, are but as beaklets compared with those of their brethren of the oak ;* yet they form, we can tell you, no despicable instruments of destruction, employed as they are by thousands in simultaneous and incessant labour. And this considered, who can wonder at the marvellous and unsightly changes, the spoil and havoc,

* Oak Aphides, (*A. quercus*.)

which these peaceful armies carry in their wake. The leaf, whose surface, when they take it in possession, resembles a smooth green plain, or, divided by intersecting veins, a country of verdant fields, is presently warped and converted into barren hills and arid dales by the extraction of its fertilizing sap; while the tender bud and vigorous shoot, though differently, are equally distorted and desiccated by their operations.

For the most part, these Insect marauders, living to eat and to be eaten, seem to have no other business, no thought or care, except on the matter of supplies, and take no trouble to conceal their ranks from the observation of their numerous enemies, or even to shelter themselves from the stormy wind and rain which sweep them off by millions. That well-known *blighter* of the hopes of hop-growers (in common parlance yeapt "the Fly," albeit generally wingless) is an open ravager of this description, feeding sometimes on the upper, sometimes on the under side of the leaf. But to this general rule there are numerous exceptions, and a familiar instance of their defensive works is to be met with on every Aphis-blighted currant bush. Take one of those leaves so often seen bloated by raised blister-spots of brownish red, examine their answering concavities beneath, and within these snug recesses you will intrude on as many social groups of Aphides, using their pipes in each separate divan.

Some other species, common on poplar, lime, &c., are provided with places of assembly, habitation, and concealment, of

a far more comfortable and complete description ; but of these we shall have more to say by-and-by, when speaking of Gall-insects, among which they have been assigned a place.*

We have thus far been only looking at our Lilliputian hosts with reference to ourselves and to vegetables, in their capacity of *destroyers* ; but, as connected with their own world of Insects, they play a more passive, but very important part, as *providers* or furnishers of food, a portion of which they may also be considered as *producing*.

Most of us have heard of honey-dew, and know, probably, that it is a sweet clammy substance, found on the leaves of various trees and plants, especially on the oak, the vine, the hop, and the honeysuckle. As to the real nature of this sweet poison to the plant, opinions differ ; and some, perhaps, even of the learned moderns know as much about it as did the learned ancient, Pliny, who doubted whether to call it “sweat of the heavens,” “saliva of the stars,” or “a liquid produced by purgation of the air.” Careful observation seems, however, to have pretty clearly ascertained that this honey-dew, (like the honey of Bees, of vegetable origin,) is extracted with the sap, secreted, and then thrown out by the Aphides in a state of the greatest purity. Besides the profusion of sweets which they scatter around them, like sugar-plums at a carnival, they always keep a good supply within the green jars of their bodies. By the lavish distribution of these saccharine riches, our little

* By Rennie.

Aphides make for themselves, it is true, a few interested friends, while, on the other hand, they owe to their possession a host of devouring enemies.

Réaumur designates the race of Aphides as “the very corn” sown for the use of their more powerful insect brethren; but as animate creatures, as well as gregarious green-leaf grazers, they have been considered with more propriety, as the *oves* and *boves*, the flocks and herds, of those which seem permitted to hold them in possession. Foremost among these Aphidophagi, or feeders upon Aphides, we must rank the Lady-bird. Innocent as she looks, that misnamed *Vache à Dieu*, instead of grazing innocently on the fruits of the earth, loves nothing better than to stuff under her scarlet mantle, carcass after carcass of Aphis lamb or mutton. Even before she puts on the scarlet, and while yet in her own tender youth, she is, if possible, still more given to inordinate excess in the same living article of animal food. In other words, while she is yet a flat, lead-coloured, six-legged Grub, instead of a rotund crimson-painted beetle, she fairly fattens upon Aphides. Wherever these abound, whether in hop-ground, bean-field, or rosary, there are Lady-birds gathered together; and in all such places, they do the cultivator more good by their united appetites, than he can do for himself by his utmost precautions against “the Fly.” Numerous are the winged tribes called Aphidivorous or Aphis-eating Flies, because in their first stage of being, and sometimes in their last, it is with them at every

meal, not "*toujours perdrix*" but "*toujours puceron*." Amongst this devouring crew is the beautiful gold-eyed, lace-winged Fly, which, while yet in its crawling minority, roams through its appropriated leafy fold, making tremendous use of its crooked and perforated tusks, first to slaughter, then to suck in the sweet juices of its victims at the rate of two a minute. Of less ferocious aspect, but not a whit less insatiate than the above, is the green or parti-coloured Grub of a Bee-like Fly, called a Syrphus, of which many varieties are common in gardens, darting from flower to flower, or hovering hawk-like over them. Applied closely to a leaf or stalk by their hinder extremities, which are broad and flattish, the Grubs of these Syrphi may, in June, be noticed by dozens, on the stretch for the Aphis prey by which they are usually surrounded. In this attitude they much resemble Leeches, and like leeches are in greedy search of blood,—the honied blood of their victims.

The above are the most rapacious of those comparatively bulky devourers, that (to the *extensive benefit* of vegetation and of man) appropriate Aphis flocks by wholesale; but the Aphis individual (atom as he is) is by no means so insignificant as to escape individual attack. Even the Aphis is great enough to have a parasite. One, a small black Ichneumon Fly, pierces the little green body of the unconscious Sap-sucker, and deposits therein a tiny egg, from which springs a tiny worm, that feasts and grows to maturity within its living receptacle.

We have also often noticed the Aphis of the plum-tree and others, fastened on by another infester of a parasitic nature, in the shape of a bright scarlet Mite, not to be detached from the body of its victim so long as life remains.

But enough of Aphis enemies; and now for the friends, which, as well as foes, they owe to the possession of their honied treasures. We have hitherto seen our flocks of the leaf, appropriated as sheep for the slaughter; but those to whom this fact, however new, will appear nothing strange, may smile incredulous, on being told that as "milch kine" they are sometimes kept, tended, and even reared by insect proprietors, for the sake of the sweet milk—the honey-dew—which they afford. In our history of "Fair-weather Friends," we have already adverted to this patriarchal practice, and have, therefore, only to remind our readers that it is exercised among various tribes of economic Ants, though the Yellow Ant* has been termed the greatest cow-keeper of them all. It may require some time and trouble to become witnesses ourselves of this marvellous instance of Formic economy, already proved beyond a doubt by the observations of others; but everybody has an opportunity of noticing that Ants and Aphides are held together by some bond of union. They are continually seen in company, and a little further scrutiny presently discovers that the Ants are the followers of the Aphides, and entirely for what they can get

* *Formica flava*.

out of them. Last August, the stalks of an elder shrub in our garden were absolutely blackened at the joints by Elder Aphides, and among these were continually to be seen a multitude of brown Ants, demanding and receiving their supplies of honey-dew as emitted by the former.

Besides the general analogy which exists between flocks of Aphides and flocks of sheep, in their gentle nature, their gregarious habits, and in their being appropriated so extensively for food, there may be noticed, in several instances, a curious kind of external *rapport* between them and the woolly-coated quadrupeds.

There are some species of Aphides which are actually clothed with a sort of wool or down. One of them, a four-winged Gall insect,* is found in June or July on the poplar, or may be often noticed at that season, flying or floating about in the air, like a small white tuft of down. Another hoary-coated Aphis is unfortunately too well known to apple-growers under the name of "White Blight." The branches of those trees selected for their pasture by our insect sheep, are soon invested by their numerous fleeces with a hoary aspect, appearing in spring and increasing through the summer. These fleeces are found upon examination to consist of a woolly or cottony substance, exuded from the insect's bodies, and under its cover a multitude of these wingless Aphides are incessantly at work with their destructive pipes, sucking up

* *Eriosoma populi*.

the sweet vital juices of the tree: the old and the young being thus employed together, parents with their offspring, to whom this soft down serves the purpose of a cradle. This "lani-gerous vesture," says Mr. Knapp,* "serves not only to convey the creature from tree to tree throughout the orchard, but also, in autumn winds, becomes a vehicle for its destruction, many being borne away by their fleeces to perish far from their parent stem. Those which are left to abide the winter are protected from its rigour partly by torpor, and partly by a short downy cloathing with which their bodies are invested, under the long one before described."

Let us conclude our "Article on Aphides" with a few distinguishing traits of their personal character and peculiar physiology. "Character! (say you) what scope for the display of character in a little denizen whose world is comprised in a single leaf or flower-bud—who is born but to eat and be eaten?" Why, it is with reference to the latter point, that very law of its existence which condemns it to be eaten, that our little Aphis exhibits a notable pattern in the virtue of passive endurance and submission to the decrees of fate. Never did Turk bend his neck to the bow-string or rush upon the scimitar with more perfect composure and nonchalance, than does our lamb of the leaf submit itself to the murderous jaws of its lion-like or wolf-like destroyers, seeming perfectly at ease, and enjoying life to the last bite or sup, while its

* Journal of a Naturalist.

merciless slaughterers are heaping up carcasses around. One of their devourers, indeed, the Grub or Larva before mentioned of the lace-winged Fly, seems to play the part of a wolf in sheep's clothing, dressing itself up in the skins of the slain; but as the composure of the Aphis flock appears equally undisturbed where no such disguise is put on, it would be unfair to suppose they are deceived into philosophy. But perhaps, say you, they are not aware of the presence of their enemies. Possibly not, but yet they seem to have the same organs of perception as other victimized insects, which, under the same circumstances, generally testify alarm, and make vigorous efforts to escape.

The Aphis has another singular habit, springing apparently out of the same sort of perception that it is right to die quietly, like a great-minded little Insect: just as Cæsar, who to fall like a great monarch of men, covered his face with his mantle,—or as the lion, which, to die like a great monarch of beasts, retires into some thicket or den obscure. We have spoken already of the Ichneumon, the little Fly which deposits a single egg in a single Aphis: “hereupon (to use the words of Kirby) the body of the victim swells and becomes smooth, though still full of life. Those, thus pricked, *separate from their companions, and take their station on the under side of the leaf.* After some days, the Grub, hatched from the enclosed egg, pierces the body of the Aphis, and attaches the margin of the orifice to the leaf by silken threads. Upon this,

it dies, becomes white, and resembles a brilliant bead or pearl." Every Aphis-covered rose-leaf will furnish instances of what is here described.

There is yet another peculiarity which distinguishes the Aphis from perhaps every other creature in the animal world,—a physical enigma about which the divers into nature's secrets long puzzled their heads in vain, until at last a clever, patient Frenchman* hit upon what is considered its solution.

Now, when you see in spring or early summer, a group of Aphides, a group of leaves covered with them, or even a group of trees which they have made their own, it is certain (at least we can answer for the fact on good authority), that in all the multitude on which you cast your eye, you will be looking on none but Aphides (whether winged or wingless) of the feminine gender. "Where then are the lords of these numerous ladies?" is a question you very naturally ask. Why, they are not in existence and never have been. The ladies may have had fathers, they have children (to be seen like chickens busy with their bills around them) but with perfect truth, and without a shadow of imputation on their spotless characters, they neither have, nor ever have had husbands.

Now suppose all the elderly matrons presiding over this assembly to have gone the way of all flesh of Aphides, and that you are looking on a similar company composed of their immediate descendants. Still presenting the same remarkable

* M. Trembley

deficiency (if deficiency it be) of masculine members, this assemblage will consist entirely of the daughters and grand-daughters of the defunct, and as not one of these, though each in her turn is pretty sure to become a mother, can ever boast a son, so it goes on, even to the tenth generation.

Suppose, lastly, that in September or October, you fall in with another company of Aphides regaling on an autumn rose-branch. If so, prithee, pluck it, and let us scrutinize together the assembly by which it is occupied; for being probably the tenth or last generation, it is likely to contain, at length, some of the lords of this curious creation. Aye, now we have them! here, amongst the green “petticoats” are some individuals distinguished by surtouts, some of bright yellow, some of orange, some of sober-brown,—colours worn in accordance, it is said, with their youth, middle, or advanced age. All these “Mercuries” wear wings; but even their pinions assume with equal propriety a corresponding hue, deepening from white to transparent black according to the period of their wearer’s standing. Might not our evergreen beaux (for evergreen belles are privileged even by example of feminine Aphides) take a hint from these sensibly clad seniors of the sap-sucking race. Perhaps, however, it is scarcely fair to quote as patterns in anything such out-of-the-way creatures as those we are describing—strangest of animals! but especially in the paternal character. The Insect race is celebrated for having numerous progenies, but these, our patriarchal *pucerons*,

are far superior to all the rest. They are no fathers of ten in family, nor of twenty, nor of twenty times twenty, but (marvel of multiplication!) each of these sires can boast of being the actual parent of ten generations, all, save the last, made up of daughters! You who doubt whether this is true, or may desire to know how it has been proved, we refer to the scientific pages of Bonnet, Trembley, Richardson, Rennie, and a host of other unimpeachable authorities.

* * * * *

We have to subjoin an important, if authentic, addendum to the history of *Aphis* life.

From observations made in the summer of 1846, it was concluded by Mr. Alfred Snee, that the originating cause of the potato-blight was the "preternatural abundance of the *Aphis vastator*." By this Insect is occasioned (says he) the first injury to the vegetables it attacks, and "it is thus the cause of the disease from which the subsequent changes take place. The *Vastator* attacks many plants and kills whatever it attacks. It destroys the potato, spinach, turnip, carrot, beet-root, clover, and it will even live upon wheat."

To causes merely atmospheric, such as absence of summer sunshine and the prevalence of rain, have been likewise ascribed (by most competent authorities)* the potato murrain. It has also been assigned to the presence of Fungi (in the tubers); †

* Professor Lindley, Dr. Playfair, &c.

† By the Rev. M. J. Berkeley.

but if indeed the *Aphis vastator* may be regarded as the root of the evil—more properly the evil of the root,—it confers assuredly on its tiny tribe a grave importance which none can be inclined to dispute, when they cast a backward glance on the face of Europe, dwelling chiefly on that island blot, unhappy Ireland.

The “feeble race” of Aphides is in truth not to be despised as an agent of disfigurement and devastation, though their injurious powers have probably been over-rated. Even in poetic justice it is hardly perhaps admissible to call them “sons of vengeance,” after having seen in their appointed destroyers, the “sons of mercy” sent for counteraction of their mischief. We would rather, at all events, in bidding farewell to these myriads of the leaf, contemplate them under a more agreeable aspect; as recipients, namely, of life and enjoyment, living only, so far as concerns their insect brethren, to imbibe and to impart of sweets.



‘The Larva wolf in the Aphis flock.’



INSECT SENSES.

"In the nice Bee, what sense so subtly true,
From poisonous herbs extracts the healing dew?"

THIS lovely spring-time has brought round a grand festival—a feast of the Senses, which seated, as sisters, at nature's bounteous board, are now being specially regaled, each with a "dainty dish" peculiarly suited to her liking.

The *Sight* now banquets on the vernal landscape as day by day the trees put on fresh tints of beauty, and as

"Daisies pied and violets blue
And cuckoo-buds of yellow hue,
Do paint the meadows with delight."

Not less richly fares the *Hearing*, as it now drinks in the melodies of spring, the music of happy birds, the hum of new-born insects, the whisper of opening leaves, the morning hymn of nature fresh awakened.

Spring odours, rising meanwhile from foliage, from flower, and from field, regale as gloriously the sense of *Smell*. And *Taste* fails not to come in also for her share of new delights, yet is she, perhaps, of all her sister senses, (among whom she is the least refined,) the one least specially treated in this pure and delicate banquet of the spring. The pleasures of taste, accordingly, are now less actual than anticipative—pleasures enjoyed through the promise of advancing vegetable and of budding or flowering fruit-tree.

Again, not with one simple viand, but with a delicious compound, the *Feeling* (which we shall venture to call a sense general, derived from all others) quivers with new delight, as spring influences send the blood dancing through our frames, like the rivulets, so lately frost-bound, careering through the flowery meadows.

Such is the grand spring-festival of the senses; and shall we, towards whom these sisters, five or seven,* are employed to do the honours of such a banquet, sit down or rise from the repast without a “grace” rendered to the Great Provider of

* Dr. Virey divides the senses into three intellectual—viz., sight, hearing, and the internal sense of thought; and four physical—viz., touch, love, taste, and smell.

the feast? Do not these very senses each lead us directly to the payment of such befitting homage?

The eye, is it not the crystal window through which mind looks out and communicates with nature, and shall intellect, the eye of the spirit, be content to rest on natural things without rising, by aid of its corresponding organ, to things divine?—Shall the ear bring us delight in the sweet harmonies of spring without our hearing amidst and above them all, an invocation to unite with heart and voice in the chants of universal praise?—Shall we inhale the pleasant fragrance dispersed by perfumes of the earth, the incense of the groves, “God’s first temples,” and not offer therewith the more acceptable incense of a grateful spirit?—Shall the feeling of this reviving spring-time pervade our frames, and even lightly touch upon our hearts, yet there stop short,—short of that inmost sanctuary where within our “heart of hearts,” if a fitting tabernacle, the Source of Life himself does not disdain to dwell?

With ourselves, then, this feast of the senses should be but an antepast to a banquet more refined, an avenue to higher delights, a fleeting image of pleasures which abide for ever; but looking around us, we see at the same bounteous table myriads of fellow-partakers, with whom the pleasures of sense would seem to constitute the sum total of their happiness.

That, among these, insects are endowed with senses like our own, is now almost universally acknowledged; and that

they may possess, besides, other resembling gifts, of which we can form no precise notion, has been not improbably conjectured, though doubt still attaches to the seat of some of the organs by which they are exercised. This is by no means the case, however, with the instruments of sight, which in most insects are sufficiently obvious. A child can point to the eyes of a Fly or Bee as readily as to those of an ox; and though the child judges only by analogy of position and of form, dissection and experiment have alike induced the natural philosopher to assign the name and office of eyes to those large, brown, reticulated bodies, which in the said Fly or Drone-bee are seen occupying the greater portion of the head. Besides these, the same insects, and most others, are provided with three smaller eyes, termed *ocelli*, which resemble shining points, and which are usually placed in the form of a triangle, above and between the larger pair.

We find, therefore, that both as respects the size and number of their visual organs, Insects have greatly the advantage over all other animals at present known, amongst which there is not one which can boast of five, much less of eight eyes, or of twenty, the complement bestowed upon the Spider and the Centipede.

We are by no means, however, to set it down for granted on this account, that every insect is a little eagle or Argus in power and quickness of vision; for their many eyes would sometimes seem to serve them like the hare's "many friends,"

or like the many servants by whom we are often worse waited on than by a few. All that we can pronounce on with any certainty is this—that the gift of sight, as well as of every other sense conferred on insects, is adequate to the exigences of their nature : for the rest, the closest observers are much at variance.

The Bee, for instance, which is supposed by Huber to possess the faculty of seeing in the greatest perfection, and, chiefly by means of this surpassing vision, to be enabled to retrace its way to its own hive, is yet denominated by one poet, “a dim-eyed creature,” while another, with reference to the eye, writes of

“Its orb so full, its vision so confined.”

Poets, it is true, are not always the best authorities on points of Natural History, on which often over-stepping the fair bounds of poetic licence, they are apt enough to mislead rather than instruct. Yet as regards this matter of the sight of Bees, the poets above cited are in no want of scientific opinions, at least as many on their side as on the opposite. Wildman, and Drs. Bevan and Evans, all consider the sight of the Bee as somewhat imperfect, and more adapted for distant vision than for near, enabling them indeed to fly “straight homewards through the trackless air as if in full view of their hive, but then, permitting them to run their heads against it, seeming to feel their way to the door with their antennæ, as if totally blind.”* And yet again, according to Réaumur, they ought to be no such gropers ; because, as his experiments would seem to ; prove

* Dr. Evans.

their eyes are of two kinds, the two large ones being adapted for distant and horizontal vision ; the three smaller, at the top of the head, serving for that which is near and upwards.

One of the most curious peculiarities observable in insect eyes, in those of them, at least, which are large and conspicuous, is their compound construction. Their *cornea* (or outer coat) instead of being smooth, is numerously divided into what are called facets, each of itself a little perfect eye.* Of these, a Butterfly has been assigned in each compound organ 17,335—a Dragon Fly 12,544—a House Fly 7000.

Possessing such a multitude of eyes or eyelets under one, it might seem that of every single object Insects must be presented with a multitude of images. This, however, we have no reason to suppose, inasmuch as we, with our pair of single eyes, are not in the habit of seeing double, and as (according to Muller) “each individual facet of an insect’s compound eye can survey but a small space in the field of vision, each only contributes to the perception of all things within it. Each separate one does not at the same time see all such objects, but only conveys its impression to the nervous filament with which it is supplied, and the latter being united in the great optic nerve, a common and distinct image is ultimately produced.”

The compound eye of an insect would not seem, therefore,

* So it is said by Dr. Hooke and others ; but Swammerdam did not consider as such the numerous hexagonal divisions in the eye of the Bee.

to multiply objects to its natural possessor, but it has nevertheless been converted by the ingenuity of man into a curious optical instrument of multiplying power. Through the eye of a Flea (so placed as to command objects with the assistance of a microscope) a single soldier has appeared as at once diminished and multiplied into a Lilliputian army, while the flame of a single candle has been made, in like manner, to represent a grand miniature illumination.

The eyes of Butterflies present on examination the appearance of a multiplying glass of this description, the facets bearing a resemblance to a cut diamond. The *ocelli* or simple eyes, appearing as little points of crystal, seated mostly above the compound pair, and usually three in number, are supposed to be intended, generally as well as in Bees, for the purposes of near vision—such as examination of leaves, flowers, &c., serving for food, or presenting it in the smaller “fry” by which they are frequented.

The position of Insect eyes is in several cases worthy of especial notice: affording in their variations from the common type, so many remarkable instances of that kind creative care which adapts each organ with exquisite nicety to its intended use.

In that little shining Beetle, called the Whirlwig, which may be seen every summer's day whirling about the surface of smooth waters, each of the eyes is, as it were, divided into an upper and a lower half: the one for looking up into the

air, the other for looking down into the water. Those of the Harvest Spider are seated at the top of the head, of all positions the most convenient for a creature living chiefly among grass or stubble. In a common Spider, the eyes, which are all of the simple kind, are no less excellently calculated by their varied positions, front, top, and side-ways, for commanding that range of sight so useful, especially in the hunting tribes, for perception and seizure of their prey.

While on the subject of Insect eyes, we must notice one more peculiarity which distinguishes them in appearance from all others, and this is their immovability, with, in most cases, seeming opacity. The want of movement is, as we have just seen, sufficiently made up to their possessors by means of number and position; but this characteristic of death-like stillness and deadness, in that organ which in nearly all other animals is most expressive of life and intelligence, contributes, we fancy, almost as much as their diminutive size, to make us under-rate the intellectual powers of Insects, and leads us to refer the whole, instead of a part only, of their ways of wisdom to the compulsory power of instinct. This is but natural. Look at an Insect as we may, it never appears to look at us; the little glazed windows whence mind peeps out and communicates with other minds, seem in it, as it were, darkened. Yet this, after all, is only an appearance and should not, therefore, be allowed to influence our judgment as to the position assignable to Insects in the intellectual scale of being. To

this general character of dull opacity, thus observable in the eyes of Insects, there are however a few exceptions, though these are none of the most pleasing sort.

There is the eye (as a larva) of that Bug-destroyer, (albeit a Bug himself,) the *Reduvius personatus*, with its dark pupil and blood-red iris, illumined with a glare of fierceness. And somewhat resembling in colour and expression, is that of the Scorpion from the gaze of which, if of augmented size, we should recoil with horror. The golden eyes of the beautiful lace-winged Fly; the eyes, painted in stripes, of many of the Gad-Flies; the flower-like eyes of another Insect, an exotic,—are all beautiful varieties of the optic organ, though in point of expression they may rank no higher than the less ornamented instruments furnished commonly to the Insect crew.

Many species of nocturnal Moths sail through the dark ocean of night, carrying lanterns at their prows in the shape of eyes, which, black or brown by day, become glowing sparks in the gloom. These perhaps are the only Insect eyes which may be strictly called luminous; but those of the fierce Dragon Fly, and of its gentle prey, the white Garden Butterfly, display in day-light a more than ordinary share of crystalline transparency.

Of eyelids, Insects, we believe, are wholly destitute, but they are often amply provided with eye-lashes, or with what stands them in the stead of those protective appendages. Their purpose in defending the concave surface of the eye from dust and

various injuries, is supplied by an assemblage of hairs, with which the *cornea* of Bees and many other Insects is overspread : the hairs which spring from its reticulate divisions having been likened, when viewed microscopically, to a forest of fir-trees.

Linnaeus and other naturalists have doubted whether Insects hear, although from common observation, as well as from general evidence, their hearing would seem as little a matter of question as their sight. Their oral organs would appear less decidedly ascertained. It is however usual to suppose that these are none other than the antennæ,—those slender flexible appendages, capable of being directed, like the long movable ears of an ass or a hare, to all quarters, for the conveyance of sound. Their projection and position in front of the head favours, by analogy, the idea of their being adapted to the same use as the ears of other animals ; and the infinite variety of form by which those of the latter are distinguished, has been fairly urged against objections on the score of their unusual shape.

Observations, such as may be multiplied daily by ourselves, have also tended to confirm the above inference founded on analogy. Kirby adduces among other examples, the common use made by those prying parasites, the Ichneumon Flies, of their long, flexible, ever-moving antennæ, which they are accustomed to plunge into the deep nest-holes of the solitary Bees, whose grubs are converted into living receptacles for their eggs. Some indeed have conjectured that it may be merely with intent to explore the nest, and feel for her infant

victim, that the insidious *Ichneumon* thus inserts her antennæ ; but since the holes are always so deep as to prevent the possibility of her thus reaching the grubs, as they live at the bottom, it seems much more probable according to the opinion of the writer in question, that she rather employs them as ears to detect any sound of eating or moving from the occupant of the nest.

Various other Insects have been observed to direct their antennæ towards the quarter whence noise proceeds. Among these, the long-horned (or long-eared) tribe of Grasshoppers and Crickets, are (as Rennie remarks) especially alive to the sounds which usually give notice of the approach of friend or foe, such as the rustle of a leaf or the foot-fall of an Insect brother. The same naturalist observed a green Grasshopper incline an attentive ear to the rustle of a piece of paper under the table where it was placed, bending its long antennæ, or one of them, in the direction of the sound.

It would seem then scarcely to be doubted that Insects hear with their antennæ ; and that with the same instrument they also touch and feel, appears almost as evident. For it is in the exercise of touch and feeling applied to purposes of social intercourse, that these flexible appendages are constantly employed by Ants and Bees, which are said, on this account, to converse by antennal language. Nor does this supposed use of them at all militate against that of the same organs for conveyance of sound. These, however, are all matters of inquiry on which a

degree of doubt is still existing, quite sufficient to invite the lovers of nature to make active and careful use of their own senses, judgment-guided, in the investigation of those resembling gifts bestowed upon the Insect tribe. The nature of Insect voices, with the instruments by which they are made audible, will form the subject of another Episode. Suffice it to notice here, that a power of producing sounds would scarcely have been given them, unless a capability of mutual communication through their medium had at the same time been afforded. By these, and perhaps also by smaller voices, to us inaudible, the passions of Insects are likewise no doubt expressed; and that their tones, though entirely instrumental, are susceptible of alteration at least through fear, is evidenced by a common fact noticed alike by naturalists and poets. When a fly finds herself in the power of her Spider-foe, her

“Fluttering wing

“And shriller sound declare extreme distress :”—

a sound totally distinct from her usual buzz, and elicited only by that excess of terror, or peculiar form of it, which even capture by the hand or in a honey-pot is insufficient to call forth. The shrill scold of a Humble Bee when imprisoned in the hand gives audible evidence no less indisputable of mingled fear and anger.

Insects are pre-eminently gifted with the sense of smell. No flock of vultures can be directed more unerringly to their revolting prey by scenting its odours from afar, than are certain

Insects, such as Dung-flies and Carrion Beetles, whose corresponding office is to assist in ridding the earth of offensive objects. That the sense of smell alone directs the Blow-fly in the deposition of her eggs, has been fully proved by the fact of her having, through misguided instinct, been found to lay them on silk wherewith tainted meat has been covered, or upon the ill-odoured Stapelias, a tribe of hot-house plants, which in scent greatly resemble it.

The Butterfly and Bee, with other winged collectors whose more agreeable business lies among sweet odours, are equally quick scented in their detection at distances almost incredible. From a prodigious height, not less, it has been estimated, than sixteen or twenty feet, the former lights down upon its favourite flower; while the latter wings its way for miles in the exact direction of flowery fields and thymy downs, from which scented breezes bring them invitation. Even when at hand, it is the odour of flowers rather than their appearance by which both Bees and Butterflies would seem to be enticed; for it was found by M. Huber, that four Bees and a Butterfly were speedily assembled round some honey which he had placed, for experiment, in a window, concealed by shutters only sufficiently open to admit their passage. Availing themselves of this liking for sweets and perception of their distant and invisible presence, moth collectors are in the habit of anointing the trunks of trees with honey or thick syrup, by which means they attract and capture not a few varieties.

The perception of Insects with regard to odours is farther evidenced by the peculiar scents which several of them are known to emit, and the purposes to which their emission is in some instances applied. In the case, for example, of the Ant, so well known to be redolent of Formic acid, the perfume left as it travels on its line of march, has been ascertained to serve as a guiding clue to its comrades in the rear.

Though thus generally admitted to be what the Italians would call most excellent *Nasuti*, Insects still puzzle us as to what exact part of their enigmatical frames may be considered an olfactory organ. This is a point on which naturalists of the highest credit have been so much at issue, that when we read the opinions of each, and the experimental evidence adduced by each in support of his own, we seem as if we could scarcely arrive, between them, at any nearer conclusion than that Insects must be all nose.

By Kirby and Spence, they are invested indeed with the nasal appendage corresponding in position, if not always in shape, with the conspicuous proboscis of a man, a monkey, and the other Mammalia. Huber also opined that their organ of smell is seated in the head and near the mouth, at all events in the case of the Bee; and in proof of his position, he tells us, that having dipped a fine pencil in oil of turpentine, he approached it carefully to every part of a Bee's head, but without causing the least apparent sensation until approximated to that in question, when the Insect starting suddenly from the honey

on which it was regaling, beat its wings with violence, and would have flown off but for a removal of the offence. On repetition of the experiment the same effect ensued: the angry Bee fanning itself with its wings, as if to blow away the unwelcome odour.

For all this, neither arguments nor facts are wanting to make it seem probable that insects in general are destitute of noses, or at least of the noses proper, usually recognised as such. The following is a plausible reason on this side of the question. Smelling and breathing, as every one knows by his own inspiration, are faculties very intimately connected; it would hardly seem, indeed, that the former could be carried on without the latter. Now insects, it is well known, do not breathe through the head at all, but usually through a row of pipes running along each side of the trunk, termed spiracles or breathing tubes, of which the mouths are clearly discoverable in grubs and caterpillars. To these spiracles, then, as organs of breathing, has been assigned also the office of smell; and though this doctrine and the above may appear, at first sight, totally at variance, perhaps the truth, when clearly ascertained, may nearly reconcile their difference, inasmuch as the last or upper pair of spiracles, though not seated in the head, approach it very closely. The spiracles in a Bee's neck are said to be placed at the origin of the tongue.

No one can observe and consider the works of Insects without feeling pretty well assured that their sense of *touch*,

be it seated where it may, is exceedingly acute and delicate ; and that though they build and weave without the help of hands, they must be provided with some *handy* instruments or organs, which to them sufficiently supply the place of that most admirable piece of Divine mechanism.

The feet of our insect artificers, curiously jointed and often palmed, seem to partake, indeed, of the power, and to perform in some measure the office of our hands ; but in aid of the feet, the antennæ and the palpi (four-jointed bodies near the mouth), popularly termed *feelers*, are also for ever at work to try, touch, and examine.

The wings are also ranked by Rennie as organs of touch, and as of no mean importance in the guidance of flight, their surface being furnished with nerves adapted to that purpose. He considers it, therefore, probable that Bees may be enabled to return so unerringly to their hives, in part at least, through the varied impressions of air upon their wings.

The susceptibility evinced by Insects to atmospheric changes and their prescience, in consequence, with regard to weather, is evident to all who are accustomed to observe them. "When," says Kirby, "a tempest is approaching, they are most abundant, and many species may then be taken which are not at other times to be met with ; but before the storm comes on, all disappear." This high sensitivity to electric changes has been attributed to the antennæ, and to the hairs with which the bodies of many insects are thickly covered.

We come now, in the last case, to the important faculty of taste, with which Insects of all classes, and in every region of the earth, whether of propensities herbivorous or carnivorous, are found to be no less exquisitely gifted. Caterpillars are, according to their kind, either *general* or *particular* feeders; but even the former confine themselves to particular classes of plants, and among the latter are some so exceedingly nice, that (cormorants as they are) they would sooner die of hunger than eat of leaves other than those which furnish their accustomed food. The caterpillars of those beautiful little meadow Butterflies, the “Blues” and the “Coppers,” which feed, in their infancy, on the grasses over which they subsequently sport, are wont, we are told,* to appropriate, each for its own peculiar fare, one of the various species which are often intermingled in its native meadow,—that, most likely, on which, with instinctive foresight and discernment, the parent had deposited her egg. Other caterpillars, found sometimes on the poplar, sometimes on the willow, have been found to eat only the leaves of its tree of birth; and, displaying a degree of discrimination yet greater, we have observed, in those of the Lime Hawk-moth, a decided preference for leaves from the very tree whence they were taken. There are not wanting, however, amongst the liveried company of leaf-eaters, examples of appetite infinitely more accomodating; and among these, the tufted, plumed, and gaudy-coloured

* Rennie, Insect Miscellanies.

caterpillars of the "Vapourer," we have found regaling indiscriminately upon willow, pear, oak, and hawthorn.

The accuracy of taste conferred upon the Bee has sometimes been called in question, on the ground that this indefatigable gatherer is by no means particular as to the source from whence she collects her honied stores, giving, in that process, more heed, as it would seem, to quantity than quality of material. Yet herein, we may be sure, Mistress Bee knows what she is about, just as well as her insect fellows. She is most likely quite as discriminate as they, in culling for her own appetite and that of her infant charges ; and both, it is probable, would come but poorly off were her collections confined to those particular flowers or districts, which, in our opinion, supply honey of the finest flavour, though not, of necessity, that most grateful to the palate of a Bee. Our poet in writing of this Insect,

" Whose sense so subtly true
From pois'nous herbs extracts the healing dew,"

may seem, indeed, at variance with certain matter of fact relaters, ancient and modern, (among them, Xenophon and Tournefort,) who tell us of poisonous honey collected from the blossoms of the rhododendron, rose-laurel, and yellow azalia, in Asia minor, and also in Philadelphia, from the flowers of *Kalmia latifolia*.

The honeys drawn from the above and other deleterious plants, are related to have produced most serious disorders, even to fatality, both in man and beast ; but supposing such

evil consequences to fall on those only who feed on honey by usurpation, while the insect concoctors and rightful consumers feed unharmed, the latter, we think, are hardly open to the imputation of an erring taste in the selection of ingredients, wherein, though there may be death to others, there is health to them. A few instances are, however, on record where the Bees are said to have thus fatally drugged their sweet possets even for themselves.

Again, both Bees and Butterflies are well known to be anything but what we call nice in the choice of water—the dirty puddle, or even dunghill pool, being, to all appearances, as acceptable to their palates as the sparkling rivulet or pearly dew-drop; but then, it is said, that Bees only drink from these fountains of impurity in early spring, and, as it is supposed, for the sake of the salts which they contain, and which they imbibe, it is further concluded, for a like purpose to that wherewith we, lovers in general of sweets, are accustomed to take spring-doses of saline and other unpalatable flavours.

The animal-feeders of the Insect race are no less choice than the livers upon vegetable diet, with respect to the selection of their viands. Foremost among these, if ranked according to the quality of food, are the notorious Biters and Suckers which regale on man; and who cannot testify on experience, whether as sufferers or exempt, that their discrimination is exceedingly nice as to the flavour of vital fluids? Some, indeed, of the parasitic tribe which live by the juices of their fellow-

insects, such as Mites, &c., are said sometimes to make prey, indifferently, of Beetles, Butterflies, Ants, and Field-cricket; but this love of variety no more proves their want of taste or power of discrimination, than the gourmand's liking for, and nice appreciation of, the varied viands of his table.

With regard to the particular organ whereby the taste of Insects is chiefly exercised, both analogy and observation point to the mouth and tongue. In Dragon-flies, Grasshoppers, and Crickets, this little member is rounded, and somewhat resembling that of quadrupeds; in others, its shape is curiously varied; in the Wasp, forked like a serpent's; in Saw-flies, triply divided; in Bees, long and tubular; in Bugs, awl-shaped and sharp; but in all, as has been proved by recent discovery, the organs of taste and digestion are moistened and kept in order by a due supply of saliva from pipes opening sometimes into the mouth, sometimes into the gullet, and sometimes into the stomach, as may be most suitable for the purposes of digestion, and according to the greater or less solidity of food. Of the existence, and one of the uses of this salivary supply, we are furnished with a common example in the proceedings of a Fly, in discussion (in solution rather) of a lump of sugar, by help of a solvent let down through the sucker, which serves afterwards to draw up the syrup. We have seen the same operation performed by the Gamma (γ) and other Moths.

We must here have done for the present with Insect senses. Our brief description of them has been—to the *eye*, but a sketch

copied chiefly from the laboured pictures of careful naturalists—to the *ear*, it would read but as an imperfect echo of their minute descriptions, attractive indeed when verified by observation; but, in the mere perusal, *smelling* somewhat more of the lamp of science than of the flowery, sunny fields. We have but *touched* on what has been elaborately handled,—given a *taste* only of what has furnished ample food for inquiry to many minds greedy of knowledge, which, with all they have devoured, leave an exhaustless store behind; but little as we have laid before our readers on the subject of Insect senses, that little may have sufficed, we hope, as an incentive to the at least occasional employment of their own upon the nature and manifestations of those similar gifts bestowed upon the tiniest Midge; and wherein the Midge may be looked on as equal to the man, except inasmuch as the senses of the latter are exercised as handmaids to observation and to thought.

But are our senses and our reason worthily occupied in scrutiny of the miniature organism of the tiny beings whose endowments we have been considering? We think they are. There are miracles of minuteness as well as of magnitude, and in few things, perhaps, is the power of the Creator more admirably displayed than in the perfect senses of Insects considered relatively to their size. We can imagine a spark of life enclosed in the body of a Mite, because we are accustomed to consider vitality as a thing independent of space, therein resembling its divine source; but when we think of five, seven,

or more distinct senses, each with its perfect, curious, often complicated mechanic organ, as existing in a creature no bigger than a full stop, or even invisible to our unassisted sight, we are led at once from the extreme of minuteness to the infinite vastness of that Creative Power whose works can neither be circumscribed by want of space, nor lose one atom of importance because, for want of bulk, they may be impalpable to *our* limited perception.

On the whole, then, it would appear that Insects can boast of very rich endowments in the gifts of sense, and ample in proportion would seem the amount of enjoyment which they are permitted to derive from their exercise. Our little denizens of leaf and flower are, in short, most “epicurean animals.” Already is their feast begun on the succulent and tender products of the spring: but let us for a moment anticipate a season more advanced,—let us wander together on some fine morning of midsummer into the fragrant flowery woods; and, while our other senses drink delight involuntary, let us fix our sight, and regale it upon a visible epitome—a perfect concentration of Insect pleasure, tasted through the medium of like senses with our own. Ask you where? Why! on this branchlet of the graceful eglantine. Look! in the very centre of that expanded rose, rolling and revelling amidst the crowded anthers, and scattering their golden dust upon the ivory petals, is a red-tailed or “red-tipped” Humble-bee. He, we may be sure, is in the very height of enjoyment, as ever and anon he sings shrilly

with delight, and plunges deeper and deeper into the perfumed chalice. Can anything exceed his energetic active pleasure? Only, possibly, the calm, lazy luxuriance of that sleek, soft, Sybaritish Caterpillar, rose-fed, rose-cradled, now regaling, heedless of the joy above him, on a delicate morsel of the flowery couch whereon he lies,—his green length extended, the very image of sensual sloth.

But, ah! Sir Caterpillar! thou *pillager of cates*,* fit for the food of fairy! blissful as thou seemest in discussion of thy roseate repast, here is a brother, a less bulky one, of thy gormandizing race, who, as we verily believe, is eating his breakfast—albeit a coarser one than thine (a green rose leaf, not a pearly petal)—with a keener relish than thyself; and why?—Because by labour he has earned it, and earned, too, a greater measure of security from attack of surrounding foes—quick-sighted bird, and yet more dangerous, quick-eared, prying, piercing Ichneumon. He hangs close by, encased, all but the head and shoulders, which, on the slightest alarm, he would presently encase, too, in a tent or hammock of his own workmanship, curiously wrought of leaves of the rose-tree, spirally rolled together, and suspended by silken cords of his own spinning, so as to bring him within convenient reach of the young green foliage on which he is making his repast.

Let us notice, last, though it seems not least, the evident ecstasy of a thirsty, habitually thirsty Butterfly, a little

* The term Caterpillar is derived from *pillar* and *cates*, signifying provision.

Garden-white, come to the wood thus early to drink the falling dew-drops ere they dry ; while overhead, seated on the branch above her, are a pair of pretty japan Moths laying their heads together for discussion, doubtless in antennal language, of some topic of mutual interest—the alarming sound perhaps of our voices or our footsteps ; for now, turning their long horns, otherwise long ears, towards us, they take to flight ere we have time to catch more than a glimpse of their beautiful fringed wings of bronze and gold. Ah ! little fairies ! it had been better for our cabinet, and worse for you, if your sentinel senses had been less on the alert !

The above is no imaginary picture, but a group of objects which may be seen any summer's day in localities such as we have represented.



"The passions are expressed by sounds."



A DEFENCE OF WASPS.

“I love an honest thief.”

THE month of Mars has been unusually pacific, and “Our Lady’s Day” has brought us, in consequence, a thicker sprinkling than usual of early spring flowers; not yet, indeed, profusely, but most impartially has Flora begun to scatter her gifts, in earnest of future bounties. The speed-well by the way-side already smiles encouragement to the traveller; the daisy (eye of day) looks up cheerily from the meadow; the wood-anemone peeps out gaily from the copse; the bare blossom of the colts-foot, like a released captive eager for light

and liberty, has shot from underground to meet the sun, without waiting to put on her green-leaf mantle. Every garden has its scattering of snow-drops, crocuses and hepatica ; and now there is not a wall so mouldering, not a bank so dry, not a spot so barren, but can boast its peculiar ornament in the lively white blossoms of the whitloe-grass.*

Tufting, also, the roof of many an humble cottage, this little hardy flower of poverty and promise, seems created as if at once to impart and to betoken hopeful feelings : such feelings as are, in the present season, the natural spring growth of every healthy mind, in every station, however permitted for awhile, and for ends of Infinite Wisdom, to be crushed or stinted, most frequently, alas ! among the poor, through human agency. But how, amidst spring flowers, have we stumbled on oppression, that foul weed of the social garden ? Perhaps, because like the whitloe-grass, it clings not unfrequently to cottage roofs ; and perhaps, also, because with the return of even a spring-quarter, “distresses” are too closely intertwined in the shape of notices, distrainings, or ejectments—consummations dire to a dark winter of struggle, starvation, sickness, and old age ; one, perhaps, or all of them.

But no more of these moral bind-weeds, choking the spring products of the mind, except to read in the page of Nature’s book, now open, an emblematic prophecy of their extermination ! In the glow of that genial and rising spirit of ameliora-

* *Draba verna*.

tion which now prevails, slowly but surely they will disappear, even as the icy fetters which arrested, but a month ago, the gliding surface of this streamlet. See ! how gaily does it now sparkle in the sun, putting on (to be in fashion) a wreath of gladness, and reflecting, in lieu of leafless branches, the glories of the palm-willow, already rich in the gold and silver of her flowery catkins. This willow's wealth would seem, however, like other riches, to have had its attractions for the spoiler, for here is a host of Insect plunderers finally awakened from their winter torpor, and brought from far by the honied perfume which fills the air. Yet truly, these are no plunderers; they are the labourers of the hive. We ask your pardon, little types and patterns of industry, and are right glad to see you on the wing. Load your thigh-panniers as you please with golden treasure, *you* are no pilferers, for you take without despoiling, and *you rob for us*.

But stay, what have we here ? an idler among labourers ! a highwayman among travellers ! a Wasp among Bees ! A Wasp in March ! Yes, truly, and a Wasp of Wasps ; a very Robin Hood of plunderers, in comparison with whom the last of his pilfering fraternity, seen in autumn on the last peach, was but a Little John indeed. Let us watch his proceedings. Is he going, *à la coutume*, to attack the Bees, or, contrary to custom, the flowers only ? Neither ; for scornfully passing over both, he has alighted on this old post beside the willow, and there he stays ; by turns walking, and standing, and

shaking his wings. Now, he seems to be engaged about something, but what nobody can tell, unless he is biting and gnawing the wood for very idleness ; or perhaps (waspish fellow as he is), for very ill-humour at seeing the Bees so happy and so busy around him.

There ! he has left the post, and flown down to the bank-side ; and now, all at once, he has disappeared within a hole, the *hybernaculum*, we fancy, of some field-mouse, into which he has entered without even the common civility of asking permission. What business is he after ? some mischief or another, that's certain, for whenever yet was Wasp or vagrant intent on good ? always poking his nose, now into this cranny, now into that, peering here and prying there. Well ! there's not an atom of his great golden-winged body to be discerned within the tunnel ; so there's certainly no seeing what he is about, and he will not tell us if we wait for his return ; besides, a cloud has passed over the sun ; the Bees have all gone off, some with panniers only half-loaded, as if expecting an April shower before its time ; and perhaps we shall be prudent to take their warning and go home too.

Here we are, again seated by our own fire, such as is always agreeable on an overcast afternoon in early spring ; and we are, consequently, in pleasant mood, disposed to be in good-humour with, and do justice to all ; with proportionate desire to atone for word or deed of unfairness committed towards the meanest creature. Now some such

debt of compensation do we owe to that gigantic Wasp, met with in our morning walk, and left, just now, exploring the mouse-hole tunnel. We have been employing, it is true, the last half-hour in recording with the utmost accuracy, those of its proceedings which met the eye; but then we have hinted at its purposes, only in accordance with the common and prejudiced notion that Wasps are always after mischief, while we were all the while perfectly aware that our Wasp was bent upon an enterprise, which, however fraught to us with incipient evil, was in itself highly laudable, and worthy, not of an idler or a freebooter, but of a perfect hero, or, more properly, heroine: this *great* individual being, in fact, of the female sex.

Now suppose a certain princess, perhaps but recently a bride, to have seen her husband and her servants fall successively around her, the victims of some sweeping pestilence, followed by an earthquake. From a violent paroxysm, she herself sinks into a stupor of grief, from which she awakes to find herself alone. Under such trying circumstances she feels, perhaps, that she would rather sit and wring her handkerchief till she had wept, like Niobe, a pool big enough to drown, at once, her sorrows and herself; but, having a right royal spirit, she combats her woman's weakness by thoughts magnanimous. Though it would be easier to die, she must live and bestir herself, not for her own sake, but to uphold the honour of her princely house, which can only, indeed, be preserved from utter extinction by the preservation of the posthumous heir,

which she is likely to bring, soon, into his desolate inheritance. In earnest, therefore, does she arouse her energies, and so much to the purpose are they employed, that she succeeds, at length, by dint of individual exertion, in founding a new city and a new empire, which, peopled by her descendants, becomes fully equal to those of whose ruins she was the survivor. Of a widowed princess, playing such a part, it would be said that she was a pattern heroine: and we must now advance the claims of a widowed Wasp to a title somewhat similar, for the performance of a like extraordinary achievement.

It is commonly known, we believe, that the race of Wasps, in general,

“ Falls as the leaves do, and dies in October.”

Such, in fact, is the case with the numerous herd of *working*, or, as we generally call them, *thieving* Wasps,—with the males (a quiet stay-at-home class with which we have little personal acquaintance), and with a portion of the females; but of the latter, which are several times the size of the others, a few winter survivors are always left in every nest. These (of which our bulky visitant to the mouse-hole was one) after a season of torpidity awake in early spring; when each taking her own separate beat, chooses a favourable site for a new nest. Of this she is the architect, and at this she works, wholly unassisted, until the eggs, which she takes care to deposit in its first cells, furnish her with assistants in the building and

peopling of her colony. Although we do not dignify this mother-foundress of the Wasp's nest with the name of queen, she earns, certainly, by her independent exertions, a much higher claim to that title, than does the pampered monarch of the Bee-hive, who keeps her state in idleness, or performs nothing for the honour she receives, except increasing the numbers of her subjects. Be it noted, however, that the foundress Wasp, although the *first*, is not the sole mother of her community.

We have now, we hope, done away with any erroneous impressions which *we*, in our introduction of a foundress Wasp, might, to her prejudice, have helped to confirm ; but we shall go farther, and at the risk of incurring almost as much odium as themselves, attempt a defence of Wasps in general. At its head, however, we must be allowed to place a well-remembered incident of our childhood, because it may help to account for our strange advocacy of a persecuted race.

When we were of stature exceeding by about a head the height of our nurse's knee, we learnt to lisp, after her, the well-known hymn of Dr. Watts, holding up Bee excellence for baby imitation. One sunny afternoon, as she was enforcing its moral by the busy appliance of her needle, and repeating (we after her) line upon line of our daily lesson,

“ How doth the little busy Bee,
Improve each shining hour ;”

our eyes were attracted by the sight of a *Wasp*, which had

settled on the apron of our instructress. Pointing our little fore-finger towards the intruder, in whom we innocently thought that we had our subject bodily before us, we were surprised to see our nurse start up with a scream, let fall her work, shake her apron, and stamp on the floor, until a few scattered fragments were all that remained of the hapless insect. “Kill the *busy Bee*!” we exclaimed, but were sharply answered that it was a “spiteful, venomous Wasp,” and that we were very silly not to know the difference. In what that difference consisted was a point, however, on which our nurse did not deem it requisite to enlighten us. But our childish curiosity was awakened, and in order to its satisfaction, the very next time we saw an Insect which we were pretty certain was either Bee or Wasp, half-buried in a flower-cup, we laid hands on it, with a view to examination. The little forager, as might have been expected, stung our fingers, but now, making sure that it was a Wasp, we repressed a rising scream, and having first returned pinch for sting, threw off our enemy, and trampled it under foot. Triumphantly carrying the remains of our vanquished foe to our good nurse, we met with condemnation instead of praise for “meddling with the Bees, the most innocent creatures in the world, if nobody offended them.” From that memorable day we took care never to handle either Wasp or Bee, though we had learnt to distinguish one from the other. And this early impression may account for an unusual preference (except in the matter

of honey) for the genus *Vespa* over the genus *Apis*; but there are grounds for it which remain to be set forth.

We have seen, already, the vast superiority of the mother-foundress of a Wasp community over that lump of pampered productiveness called the Queen Bee; and the difference in favour of Wasps is yet more marked in the development of masculine character. The very name of the male or Drone Bee, has passed into a proverb expressive of idleness, luxury, and insignificance, living on others' labour—qualities, in the Insect, so burthensome, even to his own kind, that he is tolerated only as a necessary evil, and got rid of as soon as possible; whereas, the male Wasp, although it comes not into his province either to build at home or to forage abroad, is a good-natured, active fellow, disposed to do all he can, and to make himself generally useful. He is described by Huber as sweeping the terraces and passages of the nest, removing thence all things that offend, and even as undertaking to dispose decently of the dead,—a task wherein he calls in the aid of companions when his own strength proves inadequate to its performance. According to his merit and his usefulness he is estimated by his fellow-citizens, for he lives with them as long as the season and his constitution will permit, and the cruel autumn massacre, which defiles the Bee-hive, is in the Wasp-nest a thing unknown.

From the female and the male, come we now (last not least) to what has been called the Wasp neuter, that correspondent with the worker Bee and worker Ant, wherein the best

qualities of both sexes, the tenderness and patience of the one, and the bravery and activity of the other, seem to meet on neutral ground ; be it noted, however, that this neutral ground, so rich in every quality but that of productiveness, is, in fact, female.

Of this latter class are nearly all the Wasps with which we are commonly acquainted, both those which, as stragglers or scouts, appear through the earlier months of summer, and those which, forming the main body, make their descent in August, or more properly their ascent from underground barracks, to sap our fruits, and invade our parlours and larders. Under this, their characters of notorious depredators, we seem to have arrived at a difficult point in the defence we have undertaken, but even here we are not at fault for some most excellent pleas in behalf of our maligned clients. That Wasps are thieves there is no denying, but they are generous thieves. They steal from us, and from our pampered Honey-bees, not merely to gratify a thievish or a greedy propensity, but with a view to supply the wants of the helpless and poor of their community. Not a grain of sugar, nor a drop of honey or of peach-juice do they swallow, of which a portion is not disgorged (bird-like) into the hungry mouths of their infant population, while not a morsel of meat is pilfered, or a fly carried off, of which the whole or part is not made over to the younger and stay-at-home members of the horde.

Bees as well as Wasps are sometimes robbers, and of a much

worse description, because they rob their brethren. It is not unfrequent, we are told, for the inhabitants of a distressed hive to turn marauders, under the name of Corsair-bees. These not only attack, in a body, more prosperous communities, but like highway robbers, will lie in wait by parties of three and four, for any unfortunate single Bee returning alone and laden to its hive. "One seizes it by a leg, another by a wing, or perhaps there are two on each side confining or pulling its limbs, while they maul and pummel its chest, and bite its head. This maltreatment obliges it to disgorge its honey, which the robbers eagerly lap till they are satisfied, and then let their prisoner go."*

The Wasps are above such mean and cowardly proceedings: we never heard, at least, of their turning, under any extremity, robbers of their kind; and therefore, socially considered, they are no robbers at all. Then, for courage, a wasp is scarcely to be equalled. A single one will venture, it is said, to face a whole hive of Bees after a booty of honey, and is, in fair combat, a match for any three inhabitants of the apiary. The same character of boldness accompanies, and, in our opinion, helps to redeem the depredations of the Wasp as exercised upon ourselves. Full of spirit as she is, she is as difficult to get rid of as an unwelcome guest who has no spirit at all. We may crush her, nay cut her, and still cut in vain. She will even partake our meal, and complete her

* Kirby and Spence.

own, after that “most unkindly cut of all” which severs her head from her body. Of one it is recorded* that she lived three days after decapitation,—a miracle of nature only to be matched by the legendary ones of St. Dionysius, St. Winifred, or their Saxon prototype Queen Oswitha, who, when her head was cut off by the Danes, carried it three furlongs before she fell down and died.

But suppose them killed, what is our gain in having dealt death singly or by retail to our pilfering customers? Nothing, usually, but a flushed face, a soiled handkerchief, and may be a swollen finger. By treacherously drowning them in sweet delights of beer and sugar, we do but little better, since for the scores thus perishing we attract many more by our vessels of temptation and phials of wrath. The only mode, then, of Wasp massacre, which we consider other than wanton, because not futile, is their wholesale destruction, when we can come at them in their own strong-holds within the earth. We might possibly, however, be of a different opinion were we in the grocery line, and subject to any such tremendous loss as that of £20, said to have been experienced by a single tradesman in one season, in the article of sugar.

Both Réaumur and the younger Huber studied the domestic economy of the common Wasp, as they did that of Bees, by means of glass hives. In this they were greatly assisted by the extreme affection of Wasps for their young; for though the

* By Lyonnet.

nest be carried off, cut in various directions, and exposed to the light, they never abandon it, or relax in their attention to their progeny. No less admirable than the affection thus testified, is their ingenuity displayed, under the same circumstances of distress, in repairing the breaches of their habitation, removing its ruins, and fixing it to the glass by columns of support. Operations such as these, suggested by, and adapted to, unlooked for exigences, savour certainly of something beyond the limited powers of instinct ; and an anecdote related of the Wasp, by Dr. Darwin, exemplifies yet more strongly its capacity of adapting means to ends.* The doctor saw, on his gravel walk, a Wasp with a Fly nearly as big as itself. Kneeling down, he distinctly observed it cut off the head and abdomen of its prey, and then, taking up the trunk to which the wings remained attached, fly away ; but a breeze of wind acting upon the wings of the Fly, turned round the Wasp with its burthen, and impeded its progress. Upon this, it again alighted, sawed off first one wing, and then the other, and having thus removed the cause of its embarrassment flew off with its booty. In the above instance the Wasp seemed to have omitted a part of its usual operation on the bodies of captured Flies, all the wings of which we have several times seen them thus dexterously cut off.

Let us now return to our starting point of this morning—the streamlet side—the palm willow—the hole in the bank—

* Quoted by Kirby and Spence.

and the giantess of her kind who disappeared within it. At her business there we may now make a tolerable guess, namely, that, as survivor of an old house, and sole foundress of a new one, she was employed in laying its foundations, having availed herself, as is not uncommonly the case, of the previous labours of a mouse, to save her own, in the preparatory business of excavation. Quite as frequently, however, the foundress Wasp is indebted to no other agency than that of her own powerful jaws and claws for the digging out and carrying away of the earth in which she forms her burrow,—a chamber usually of one or two feet in diameter, approachable from without by a narrow entrance gallery.* This subterranean area being found or formed, her next operation is to lay within it the foundations or walls of her intended city. For this purpose, earth is a material which will not serve her turn, and the nature of that which she employs was long a puzzle. The substance of which the walls and cells of a vespiary are constructed is now, however, ascertained to be none other than paper formed of wood-raspings, mixed with a sort of size, worked to a paste, and subsequently spread into sheets by the Insect fabricator.

We have continually noticed, and any one in summer-time may do the same, a Wasp busily at work with its jaws upon an old paling or window frame. Now, many may suppose that there is little in this worthy of observation; but simply from

* See *Insect Architecture*, p. 73.

notice of this trifling and common circumstance did Réaumur discover the Wasp to be a paper-maker, and was enabled to trace the subsequent processes of her manufacture. Had these been observed sooner, our art of paper-making, as now practised, might have had an earlier date. The foundress, whom we saw this morning, had been occupied, while settled on the post, in the first or wood-rasping process of her fabrication ; and on entering the hole, she no doubt carried with her a bundle of fibres to be kneaded into paper-paste. Then, supposing that the nest was in an early stage of progress, she would proceed to spread a covering of this substance over the roof or upper part of her excavated chamber, strengthening the same with repeated layers. Her next proceedings have been thus described :*—" Having finished the ceiling, she begins to build the first terrace of her city, which, under its protection, she suspends horizontally, and not, like the combs of a Bee-hive, in a perpendicular position. The suspension of which we speak is light and elegant compared with the more heavy union of the Hive-bee's combs. It is, in fact, a hanging floor or terrace, immovably secured by rods of similar material with the roof, but rather stronger. The terrace itself is circular, and composed of an immense number of cells made of the paper already described, and almost of the same size and form as those of a honey-comb, each being a perfect hexagon." These cells, however, are never used as honey-pots by Wasps as

* Insect Architecture, p. 76.

they are by Bees, for Wasps make no honey, and the cells are wholly appropriated to rearing the young. When the foundress Wasp has completed a certain number of cells, and deposited eggs in them, she soon intermits her building operations in order to procure food for the young grubs, which now require all her care. In a few weeks these become perfect Wasps, and lend their assistance in the extension of the edifice, enlarging the original coping of the foundress by side walls, and forming another platform of cells, suspended to the first by columns, as that had been suspended to the ceiling. Thus, gradually, by the end of summer, this city of hanging terraces is completed : the descendants of the original foundress, many of whom are females, assisting also to provide its population, which, according to the calculation of Réaumur, may amount in one year to 30,000.

Kirby has designated the Bee-hive “a waxen palace,” the Wasp nest “a paper cottage ;” but with all due deference to that distinguished naturalist, we can scarcely admit the wide difference implied in such terms of comparison. But let us liken it to whatsoever we may—palace, cottage, or city—the desolation which falls, sooner or later, on every palace of pride, every cottage of peace, every city of business, rushes at a pace of more than ordinary swiftness on the habitation of the Wasp. Scarcely has it arrived at completion, through the labours of the youngest generation of its inhabitants, when the early frosts of autumn slightly thin their numbers ; their active

limbs and wings begin to stiffen; their vital juices to grow sluggish; their bold spirits to grow tame; their supplies, and their energies to seek them, fail both together. The same individual who, under the summer sun, would have fearlessly opposed a whole host of Bees, now suffers a starveling Fly to enter her habitation, and insult her weakness. When November comes, the Wasp population is cut of as by a pestilence; of those abroad, some fall far from their habitation, others crawl back to die; while those at home, lately so busy in the works of building, repairing, or keeping in order, are now sluggishly inactive. Even their ruling passion, their powerful affection for their young, becomes extinguished with the torpor of other feelings, or through an instinctive foresight that all are about to perish,—for the cradled occupants of the cells are neglected, and allowed to die of want without an effort to supply their cravings. It is even said that, in the extremity of their misery and despair, the old Wasps destroy and drag them from their cells. In a little while the city of terraces becomes a city of the dead; its sole surviving dwellers, and they, happily buried in torpor, are some two or three of the widowed females (such as the one seen at work this morning), on whom depends the perpetuation of the race. No sooner does the early spring awake them, than (like her) they depart, each on her way, to found another city.

We are almost inclined to wonder why one, at least, of these survivors (good housewives as they are) does not bustle about,

repair damages, cast out remains, sweep out chambers, and furbish up the already complete abode, instead of setting out, at the cost of infinite pains and trouble, to commence a new one. Perhaps, however, such appropriation by one (or two) of the ready-made property to which all might claim an equal right, might cause disputes very unbecoming to an Insect family, of which the members are not accustomed to quarrel amongst themselves. Perhaps, also, their paper walls are too much weakened by the influence of winter frosts and thaws, to weather another summer ; or perhaps But without further question, the female Wasp undoubtedly is best informed upon her own business, and to her discretion we may safely leave it.

Our defence is concluded. Can a Wasp-hater remain among its readers ?



A widowed winter-survivor



THE ROYAL REFORM.

“Subjects commonly do find
New made Sovereigns most kind.”

THERE was great grief in one of the monarchies of the earth : the queen regnant of a numerous people had just been summoned to her ancestors. Yesterday she was a brilliant spark of life, from which light and activity extended to the very circumference of her kingdom ; to-day, she is but a dull lump of mortality, casting its shade, and imparting its torpor far and wide around. The cheerful hum of labour is hushed in every quarter, and in its stead arises the mournful wail of lamentation. The royal corpse is cold, yet faithful attendants and devoted

body-guards still watch around it, as if reluctant to believe their "occupation gone." Some of these loving creatures will even starve upon their grief, and fall dead themselves around the body of their defunct mistress.

But the kingdom of Apia (that of which we now write) was always a monarchy of marvels and of strange customs, and those which regarded the succession to the crown were some of the strangest among them. The chief population of the country consisted of females, who were all spinsters, and who filled every active office in the state, from the very lowest to the highest, save one, that of the sovereign, who was also always a female, but never continued a virgin queen. It would, however, occasionally happen that proper heiresses, or princesses of the blood-royal, were wanting to fill a vacant throne, in which case a curious expedient was wont to be resorted to. Several infants were selected from among the labouring population, and from the close apartments and confined cradles belonging to their station, were transferred to stately nurseries and luxurious cots, and in lieu of common nourishment, supplied abundantly with food expressly manufactured for making queens. The quality of this precious article was so nutritive and of such marvellous virtue, as not only to swell these chosen vessels of royalty to a prodigious size, but also to fill them with endowments, bodily and mental, quite different to what they would have possessed in their original condition, and exactly suited to that station which one or more of them

was destined to fill. Who would have thought that a people, possessed of such an elixir for making perfect sovereigns, could ever have been tempted to disregard or pervert a gift so unheard of? or, that not contented with the modelling power thus put into their hands, they should ever have desired to exercise it to a greater extent, and after a different fashion? Yet so, in the course of ages, it was destined to happen; and the rise of this extraordinary spirit of innovation among the people of Apia, occurred at the epoch when our relation commences, namely, that of the royal demise.

Amidst the general demonstrations of respect and grief for her late Apian majesty, only one class of her subjects wore an appearance of indifference, and that was the very class wherein a stranger to courts might have least expected to find it, namely, amongst the deceased queen's favourites, or candidates for her favour; for having been cut off in the spring-time of her age, it was not yet known that she had selected a prince-consort from amongst her suitors, who (rivalling in number those of Penelope) amounted to no less than 400. Already indeed, had she been suspected by the jealous eyes of 339 to look with favour upon one, and in any other state, it might possibly have happened that in the failure of natural heirs, this favourite might have made a venture for the crown. But as already said, the succession in Apia was in the female line; nor was this a wonder, for the entire masculine population was always comprised in the suitors of royalty aforesaid, than whom,

even among ordinary court dangles, a more effeminate set never existed. Doing nothing, caring for nothing, but to eat, sleep, and philander with their royal mistress, they were the only members of the Apian community who never wore swords, and whether as queen's suitors, or queen's consorts, they were equally regarded, except just in that limited capacity, as the merest nonentities. From one generation to another, these poltroons had submitted, without care or murmur, to their humiliating position, and unwarned by the usual fate of their predecessors, were accustomed to purchase a brief season of idleness and luxury by a bloody end. The Amazonian queens of Apia were, in fact, a species of female Blue-beard, not that they exactly murdered, or even ordered the execution of their numerous lovers or husbands ; but being truly patriotic sovereigns and mothers of their people, they always connived at their slaughter by an infuriated populace as soon as they became an insupportable burthen to the community, and were no longer acceptable to themselves. Indeed, the principle carried out, through necessity, in a besieged city, of expelling every useless member, had always been the ruling policy of the monarchy of Apia ; and not only the male patricians, who never laboured in their lives, but a portion even of the female plebeians, when, from age, unable to labour any more, were offered up a periodical sacrifice at the shrine of expediency. However shocking the above customs, it would, nevertheless, seem that, like the bloody code of Draco, they were salutary ;

at all events, the political system of Apia worked well, and the perfection of its government, as well as the industry of its people, was always universally extolled,—held up even for imitation by the various nations amongst whom the queendom of Apia and her sister states, were located, and to whom they paid tribute.

To return to our narrative; on the occasion of the great event wherewith it opens, there occurred the deficiency above spoken of,—an heir was wanting to fill the vacant throne. Sincere as was their mourning, the loyal subjects of the queen defunct soon ceased idly to bewail her loss; and while the majority resumed their usual avocations, a select committee was appointed to the important business of making an artificial sovereign out of a piece of plebeian stuff, to supply the place of a natural-born princess. As a preliminary to this process, a party of workwomen was instantly employed to pull down a number of ordinary dwellings, for the erection, on the same site, of several most spacious royal nurseries; and in the performance of this business, so little was the regard paid to the poor occupants of these humble tenements, that a parcel of helpless children, sleeping unconsciously in their cradles, were crushed beneath the ruins. This proceeding would certainly appear of a somewhat cruel and arbitrary character; but the rule of Apia was, as we have said, the rule of expediency, and who can say that there is nothing at all resembling it among ourselves, now groaning beneath the iron rule, not of

royal, but of railway, despotism. No doubt, however, by the twentieth century, all similar crushings of people in the way, will be numbered amongst the barbarisms of a by-gone age.

From the little low-born Apians thus carelessly sacrificed, several were selected, in case of accidents, to become recipients of the royal elixir, and tenants of the palace nurseries. We shall now visit a quarter of the Apian city, where, under the hands of workwomen, both diligent and numerous, the new erections were rising, as if by magic, on the ruins of the late humble habitations. Not far from, and within view of the busy scene, stood a group of idlers, chiefly composed, you may be sure, of some of those idlers by profession—the four hundred gentlemen hangers-on of royalty deceased. With these, however, were seen intermingled on the present occasion, two or three aged and decrepit females of the working-class,—of those permitted to hold for awhile, on sufferance, their doomed and joyless lives. They were strange companions, those young lazy lordlings and those work-worn crazy crones; but times of public excitement are wont to bring together strange gossips, and there was at least one thing in common (the common fate which usually awaited them) between the opposite individuals now met. “Well, really,” drawled one of the young nobles to a brother idler, as he looked up listlessly at the building operations, “if they’re not getting on famously. The manufactory will be built in no time; and then they’ll presently

turn us out another royal mistress and *cara sposa* : mine, my lord, or yours, as may be."

The companion to whom this speech was addressed, shrugged his shoulders, looked cautiously around, and then returned, in a tone almost inaudible:—"I've been thinking whether we might not dispense with any such personage at all."—"What!" exclaimed the other, starting, his large dull eyes almost sparkling with astonishment at the unheard-of notion; "Do without our queen! our light—our life—our load-star! Surely, my lord, thou hast been quaffing too freely of the funereal nectar, and art beside thyself. Our very existence depends upon the smiles of our royal mistress." The disloyal and bold suggestor of a new idea answered only by a low sound, resembling in meaning a contemptuous laugh; and the audible sneer was echoed, though in a shriller key, by one of the aged females who had been listening to the discourse, in which she now ventured to take a part. "In good sooth, master mine," said she, "thou hast said right; thy own existence, and that of all thy brethren, did verily depend on the pleasure of her majesty deceased; and as her majesty-in-making will be finished exactly after the same pattern, why on her pleasure they will depend also; the which gracious pleasure, or (what amounts to the same) gracious permission will be, that your throats are cut (every one of you) before the summer is over." "How! how! what say you, mistress?" exclaimed both the speakers, and several other of their lounging lordships, who

had gradually augmented the group. The dark old female chuckled like a witch, when her charms work well, and with a sarcastic leer, continued :--“ Yes, my masters, a weighty obligation, truly, you were under to our late most excellent sovereign, and with reason do you pay her memory all becoming deference. Harken to her royal virtues ; innocent as a lamb, gentle as a dove, see how her acts bespoke her. Amiable lady ! no sooner had she arrived at reigning age, than inspired with noble jealousy, she, with her own hands, murdered her sister princesses. Then how laudably did she live in pompous state, surrounded by your lordships and the rest of her courtly retinue, while we, her people, supported her by the sweat of our brows ! How gratefully did she repay our labour by orders, not for pensions, but for executions, as soon as age should render us incapable of toil ! How dignified her exemption from all cares of government, concerning which she would have thought it the lowest degradation to have troubled her royal head ! Above all, my noble masters, how tender and disinterested were the favour and protection extended to yourselves, so long as you could minister to her delight ; how humane to spare your wounded feelings by giving you up to slaughter, as assuredly she would have done, so soon as her pleasure in you was at an end ! Such were the brilliant qualities, such the noble deeds of her majesty departed, and such (while our queens continue to be made after one model) will be the qualities and doings of her majesty forth-coming. What can you desire better ?”

The lordlings looked at one another in blank astonishment. With the exception of one frightful feature, (that of their own simultaneous massacre,) with which they were, of course, not personally acquainted, they could not deny the accuracy of the old crone's royal portrait; yet, owing to the new light in which she had placed it, it appeared altogether in new and alarming colours. They not only looked at each other, but they looked at the building in progress: murmurs arose;—"We'll have no such tyrant, no such cruel mistress to rule over us! We'll attack the royal nurseries, and kill all the royal nurslings in their cradles!" And then they looked as fierce as any Bobadil or Drawcansir. They even put their hands to their sides as if to feel for weapons, forgetting at the moment that the males of Apia were never privileged to carry arms about them. They forgot, too, that the royal buildings were protected both by workwomen and guardswomen, and that the bulk of the people,—indeed, the entire population, save only the superannuated, were for the queen-in-feeding, being all devotedly attached to royalty after the old model. All this the lords had forgotten; but it was only for a moment, the next they remembered it: out went their little sparks of courage, and they looked less vacant, but more blank than ever. They must submit quietly to let the new queen be made after the old pattern, and allow themselves, *par conséquence*, to be done to death as their fathers had ever been before them. But the cunning old female was made of other stuff. "For

shame, my lords," said she; "why droop ye? There are other weapons besides the sword; and though in virtue of my sex I wear one, on the present occasion 'tis a useless remedy. However, gentlemen, I know a better trick: I am old, and have long laboured in the haunts of those gigantic creatures who call themselves our masters; but I have laboured not only, like my sisterhood, to collect within their wide domain of the stores requisite for our provision, but also to glean a knowledge of their arts and sciences, not a few of which I find them to have borrowed from ourselves. Indeed, although they boast themselves superior to our race, they have always cried up the merits of our ancient institutions, lamentably defective as they are. For many ages (even till the beginning of the present century) these wise-acres were contented enough with what they called hereditary sovereigns—poor bungling tools, as bad as ours, or worse; but now, (having at length taken the hint from us,) they have learned to manufacture their own sovereigns, as we our queens, only after a much more clever and complete method. *We*, with our boasted elixir of certain and invariable properties, stuff and stimulate body and mind into an invariable shape, converting what would have been a useful, active member of society into an enormous, bloated, idle, cruel tyrant. *They*, by means of a wondrous art called mesmerism, acting on mind according as they please, contrive to expand the virtues and repress the vicious propensities of their infant subject (be it of royal or of humble birth), till they

turn out of their moral laboratories paragons of princes and princesses, such as were never before known since the world began. Now of this most curious art and mystery, you must know, my lords, that I have picked up quite enough to model you as pretty a queen as any subject need desire. Get me but a place within yonder royal nursery, and

I'll do—I'll do—I'll do!

Then, under a sovereign truly of our own making, shall we, mechanics and labourers of the community, when, like myself, worn out with toil, receive some better recompense than destitution or death; and you, my masters, instead of ending by the same, a short if pleasant life, shall be permitted by a kind and gentle mistress, to enjoy your libations, love, and leisure, even to the term of your natural existence!"

Here a mingled hum of surprise and approbation succeeded to the silence which had reigned during the speech of the aged sibyl. Personal interest had aroused her hearers from their usual drowsy apathy, and anxious for a reform of royalty, which was so greatly to benefit themselves, they were eager to test the reality of the old dame's pretensions, by doing all they could to forward her desire. It may seem strange that the male patrician order, worthless as we have described it, should have possessed any influence at all with the Amazonian people of Apia; but the latter well knew how necessary these idlers would have been for a season to the sovereign defunct; and that as they would be no less so to her successor, then in making, they

were just at the present juncture of vast importance in the state. Their recommendation was, therefore, promptly attended to, and the aged professor of the mesmeric art soon found herself chief superintendent of the royal nurseries. Here she continued, working her secret charms, until the young plebeian plants, forced into royalty, were sufficiently grown up for transplantation.

When amongst several princesses, whether royal born or only royal bred, one happened to be considerably older than the others, she was always in the habit (as a matter of Apian custom) of murdering her little sisters, even in their cradles ; but when (as on the present occasion) all were nearly of equal age, it was usual that the succession should be settled between them by single combat, a procedure to which they never wanted any prompting, save the blood-thirsty jealousy of their dispositions. It had not, however, been for nothing that the head-nurse mesmeriser had been promoted to her influential place. The crone had worked like a witch, indeed, and strange the magic of her doings with her tender charges, of whom three only arrived at maturity, and that together. Now was the time of struggle for empire or for death ; but instead of what usually took place, neither of the trio showed the smallest disposition to lord (or lady) it above her fellows. In vain did the populace, anxious that one alone (which they cared not) should reign over them, form a capacious ring around what ought to have been

the arena for the royal combatants. Instead of drawing their weapons, as became their artificial rank, the gentle maidens sat or paraded side by side, took hold of each other's arms, whispered in each other's ears, and kept looking as prim and pleasant as boarding-school young ladies on an exhibition night. The people were astounded; the lords alone delighted at what seemed to promise the entire completion of what had been undertaken by their old confederate, with whom they ever and anon contrived to exchange a furtive wink.

But what was to be done? Three queens at once! an Amazonian triumvirate! Such a thing was quite unexampled in the annals of Apia. Meetings were held among the people, who finally agreed that their crown must be made elective, and that one of the young candidates, if so they might be called, should be chosen to wear it. Yet the choice itself was not without embarrassment; the young virgins were as much alike as three peas, or the three sides of an equilateral triangle. Still people will differ about three straws, and will declare violent preferences where they would be puzzled to discern a difference. Accordingly, from the unambitious spirit of these sovereigns fresh from the mint, who cared as little for the crown as if they had been so many Ladies Jane Gray, arose a party spirit till then unknown within the realm of Apia. Each of the lamb-like ladies soon became the nominal head of a furious wolf-like faction, and the din, first of wordy quarrels, then of clashing weapons, resounded through the Amazonian monarchy.

Industry languished ; the arts of peace were neglected ; instead of, as usual, the fall in single combat of a few supernumerary scions of royalty, the most useful members of society were swept off by hundreds in general engagements ; until at length, tired of contention, the parties agreed to a compromise, and one of the princesses, chosen by lot, was placed upon the long vacant throne, the others being amiably contented to officiate as her maids of honour.

Hitherto it had been the custom of the sovereigns of Apia, either left to nature, or made up after her original receipt, to take little part in the affairs of government, being quite satisfied with permission to gratify their ruling passions of love and jealousy. Not long, however, had the new modelled queen been seated on the throne, before her softened disposition began farther to unfold itself in her frequently proposed schemes for the imagined welfare of her subjects ; but the latter, ardently attached to their ancient institutions, considered her benevolent innovations in the light of anything rather than a boon. The old mesmeric queen-maker and her superannuated companions, together with the luxurious nobles, were not disappointed indeed of the personal benefit for which they had been confederate. The former were permitted to spin out to its extreme length the attenuated thread of their existence, the reformed queen having acquired an organ of "Philoprogenitiveness" greatly too large to allow of the destruction even of the most useless of her subjects. The lives of the nobles were, of course,

on the same ground, considered sacred, and they were now favoured not only by the perpetual smiles of their gentle mistress, whose "Amativeness" had been permanently developed, but by those also of her no less gentle maids of honour. They toyed, they feasted, and they slept: no dreams of death-warrants, no visions of massacre, now haunting their repose. The working people (who, be it remembered, were all respectable spinsters) began to look grave; still they toyed. The starving people began to look glum; still they feasted. The angry people began to look fierce; still they slumbered; for they relied on the tender constancy of their royal mistress, who had the will to protect them, and the loyalty of her faithful subjects, to whom (however they might *look*) her will was yet a law. So for awhile it lasted; but darker storms were brewing. Woe to the ancient monarchy of Apia!

Safe for so many ages, while led by the clear unerring lamp of instinct, a stolen ray from the sun of reason had been furtively introduced into her very heart, and the Promethean fire bade fair to involve her in a destructive blaze. The people of Apia, though ignorant of all theories of political economy, the Malthusian among the number, were intuitively alive to the dangers of redundant population. One of their methods of reducing such political plethora has already been recorded, namely, that periodic blood-letting wont to be effected by the wholesale massacre of all useless members of the state; but this rigorous measure would have been wholly insufficient

without another aid—that of emigration, which was also yearly resorted to. In this most loyal, if not most monarchical of states, nothing could be done without the presence of the queen (who indeed, as the only matron, was truly the mother of her subjects), and it had always been the custom, whenever a party of colonizers set forth, for the reigning sovereign either to lead or accompany them, a young princess being always kept guarded in a snug corner, safe from her elder's jealousy, and in readiness to fill her vacant place. Never was emigration more requisite than at the period which followed the accession of the new mesmer-modelled queen. Her totally subdued "Destructiveness" having led her to spare her two royal rivals, these, having long since given up their places as maids of honour, had become, as well as herself, wives and mothers of a numerous progeny, and the same benevolising influence having caused her, as we have seen, to spare the lives both of the aged and of the idle of the community, the hive had never before been so overflowing with inhabitants, or so deficient in provisions for their support. Death and threatened famine were the result, and emigration (under the present humanized order of things) the only remedy; but both the reformed queen and the princesses, either of whom the would-be emigrants would have been content to follow, were much too domestic or spiritless to lead them. Collected in a hungry crowd, they wanted only a royal conductress to desert their native, in search of a distant home, but no such leader could

be found. Fuming with impatience, the anger of the famished populace, like the turbulence of a sea checked in its progress, rose the higher from obstruction. With hoarse murmurs they approached the precincts of the court, rolled onwards to the palace, and retreated not till they had swept away in their unbounded fury, those who were its unworthy objects,—the idle and rapacious favourites, whose tragic fate so long suspended, no queenly commands, no womanly entreaties could now avert. Of these, not one survived to tell the tale of their extermination. But here the fury of the multitude was stayed; the four hundred lives of the hapless nobles, including the prince or princes-consort, had appeased it, and the persons of the queen and her sister widows were sacred in the eyes of the people of Apia. So long as a remnant of provision or of strength to procure it, lasted, the royal trio knew not the pangs of hunger beneath which hundreds were daily perishing around them. The young of the community, wanting their accustomed food and usual attendance, perished also in great numbers, and some yet in a state of infancy were overlooked amidst the general distress, and suffered to corrupt within their cradles. This, together with the long crowded state of the metropolis, soon invited pestilence to fill up the measure of destruction already wrought by her sisters, war and famine; and from the hand of pestilence no rank or loyalty could save. Among those who first fell beneath her deadly grasp were the queen and princesses, leaving (as often happened) amidst

a numerous progeny, no royal heirs. The queen-making elixir had been, every drop, secretly thrown away by the old mesmeric superintendent of the royal nurseries, and the season was past for collecting those rare vegetable essences of which it was wont to be composed. Had it, indeed, been otherwise, there were none able to travel in search of them. The wretched remnant of the people, whose very life lay centered in their sovereign, now cared not to survive. Their spring of action and of industry was gone, and surrounding the corpse of their late mistress, they raised her monumental mound with their own wasted bodies.

Thus came to destruction the ancient Amazonian monarchy of Apia; but before her ruin was complete, the worker of the mighty mischief, the aged sibyl who had dared to filch wisdom (or folly) from a higher race, who had meddled in matters too lofty for her handling, had met with her reward. On the arrival of famine, she and her infirm companions were its earliest victims; thus falling by a fate more frightful, because more lingering, than that which awaited them under the ancient order of things.

BEES AS A BODY POLITIC.

“The happy people, in their waxen cells,
Sit tending public cares.”

We must now treat of Bees as a body politic ; our reform episode may not require a key, but it shall have an appendix. We cannot for one moment suppose any of our readers so ignorant of the hive's economy, as not to have discovered in the jealous, vindictive, fertile, adulated sovereign, the queen-mother of the Apiary ; in her numerous spinster subjects, busied in all cares and labours but those of maternity (and some even which to that more properly belong), the workers of the same, called neuters, though in fact imperfect females ; and in the idle, luxurious, parasitic lords of the Apian court, the lazy drones which live on other's labour.

We shall now relate a few facts concerning the economy of Bees, stripped of the fanciful attire wherein we have taken the liberty of dressing them.

If any form of government be faultless, it must be one acting immediately under divine guidance, and of this class are the instinctive institutions of social animals, which are therefore perfect in their kind. Under an idea of such perfection (erroneously applied) the people of the hive have been held up

to us people of the earth, not only as patterns of industry, but also of political economy, and have been cited not only as arguments for monarchy, but as models also of monarchical government. That men might, nevertheless, just as well attempt to build their cities after the pattern of a honey-comb, as to mould their institutions after those of the honey-comb's inhabitants, is evidenced, we should think, even in our little romance. Leigh Hunt has painted in amusing colours the egregious absurdity of such an imitation,* and the same will appear every whit as strongly in the following out-line sketch of the interior of a hive.

Insect societies, such as those of Bees, Wasps, Ants, and White Ants or Termites, are, in fact, things *sui generis*, standing by themselves; they present natural pictures to which, throughout the animal kingdom, no pendants are to be found, and it is this which makes them doubly interesting. A well-peopled hive consists of one queen, several hundred males or drones, and many thousand workers, the latter of which are all imperfect females, though bearing no resemblance, either in size or habits, to the pampered individual who nominally fills the throne, and actually fills the hive by supplying its abundant population.

The royal female to whom this endowment of surpassing productiveness forms the very charter of her authority,—the very bond by which she holds the hearts of her devoted subjects,

* In the Indicator.

derives from character but slender claims on their respect. During the entire period of her life and reign, which is generally estimated at about two or three years, she performs not a single labour for the good of the community, save that of increasing its numbers ; and her bulky body is seldom roused from its wonted state of luxurious indolence, except when her royal spirit is chafed by the influence of vindictive jealousy.

The queen of the hive, born, like the queens of earth, no better than her meaner sisterhood, like them, issues from the egg a helpless grub ; but the chamber of her birth, as compared with theirs, is of right royal dimensions, vertical in position, and of cylindric instead of octagonal form. Ample room is thus afforded for the full expansion and development of all her members, as she progresses towards maturity ; while to hasten and improve her growth, the food supplied her by her assiduous nurses and future subjects, is of the most nutritious and delicate description ; not the simple Bee-bread composed of common pollen, and considered good enough for common Bee-infancy, but a rare and curious preparation nicely concocted from flowery juices, and, as reserved expressly for royal nutriment, called by Bee-farmers, “royal jelly.” Thus spaciouly lodged and delicately fed, the favoured grub, when arrived at full growth, spins within her cell a silken shroud ; therein changes to a nymph or pupa ; and thence, in due time, issues forth in all her dignity of majestic size, in all the resplendency of her golden-ringed body-suit, the more conspicuous for the scantiness

of her gauze drapery,—those filmy wings in which alone her outward gifts, instead of surpassing, are inferior to those of her subjects.

Come we now to the busy workers, of whom the numerous sisterhood, the million of the hive, is made up. From these the Bee character has been always painted, and painted justly, as loyal and patriotic, laborious, patient and skilful, to which might be added, maternally affectionate; for though never mothers themselves, the latter propensity possesses them so strongly as to convert their office as nurses to the queen's progeny,—to all, in short, of the infant community,—into what would seem truly a labour of love. Although their instinctive virtues (if we may use the term) are so immeasurably expanded beyond the narrow growth of those apparent in their royal mistress, compression is one of the agents employed to effect this mighty difference between them; and the worker Bee, is, it would seem, made a useful member of the body politic, by a process very similar to that which renders the foot of a Chinese lady a somewhat useless member of her body natural.

The baby Bee, destined to become a Bee labourer, finds herself, on emerging from the egg, an inhabitant of one of those common six-sided cells, which (as it would appear) is so proportioned as in some measure to limit her growth, and thus prevent her from attaining her full development. To this outward restriction is super-added an inward check in the quality of the food administered by her nurses. In lieu of the

royal jelly, that stimulating and nutritious extract prepared only for the queen, her infancy is supported on the simple fare of Bee-bread, which while it suffices to bring to maturity every useful endowment of activity, affords no food for the development of the sensual and vindictive passions, and with all these smothered in the cradle, our worker comes forth, mature in all Apian excellence,—modest in habits, a nun among Insects, and a very “sister of charity” among her fellows.

Thus much for the queen and commonalty, the females of the hive ; and now for the three or four hundred of the opposite sex, who, as partakers of the royal favour, or as candidates for the same, as well as for their worthless qualities, may fairly be compared to the aristocracy of a state, where birth, not worth, makes the man. We need not describe the Drone, whether of a biped or of a Bee community, since the one is a pattern of, and lends name to, the other. The chief difference between them is this, that biped Drones are to be seen every day of the year, while Bee-drones are to be only seen, because they are only allowed to exist, during those days of summer which intervene betwixt April and August. And truly, living, as they do, to eat, a quarter’s span of luxurious existence, at the expense of those who only eat to live, is a tolerably fair proportion. Such at least would seem to be the opinion of the workers of the hive ; for the queen, having meanwhile chosen a royal partner, or partners, from among them, the whole

three or four hundred fall by a general massacre, towards the end of July or early in August. The Amazonian city is thus rid of all useless mouths, before winter with her icy batteries lays siege to its straw-built outworks and waxen walls.

Have those by whom Bee economy has been held up for human imitation, ever thought about the awful consequences which would be involved in even a partial copy of the above severely wholesome policy?

Having now glanced separately at each of the anomalous classes of a Bee community,—its matron queen who possesses no political authority, and performs no matronly duties; its commonalty of single females endowed with every manly and, at the same time, matronly virtue; and its nobility of males, the most insignificant and most effeminate of all: we shall take another look at them as they stand together socially related.

Let us suppose ourselves, one moonlight evening in May, taking a garden stroll beside a range of Bee-hives. Instead of the nightly stillness which is wont in Bee cities to succeed the daily hum, there arises from one of these a loud uneasy murmur, which instead of lessening, continues to increase with the lateness of the hour. Our hive is not of glass, but if it were, the restlessness thus audible without, would become apparent within, by the evidences of crowding, confusion, and jostling,—by all the tokens, in short, usually attendant on some grand event in expectation. From so violent a ferment of vitality, something must of necessity arise; but through the

livelong night nothing comes of it, and the morning sun rises on nothing but the same scene and sound of agitated turmoil.

From tokens such as these, an ordinary keeper of Bees would merely surmise that a swarm was coming, and an old-fashioned village dame would be sure by this time to be getting in readiness her frying-pan and iron ladle, to ring the parting colony to their new abode. But there are those who have pretended to see much farther through Bee confusion, and to enter much deeper into Bee councils. In the midst of all this bustle of movement and Babel of sound, they would distinguish, shrill above the murmur of her subjects, the authoritative voice of the queen-mother about to lead, or at all events to accompany, the departing swarm of emigrants. They, doubtless, would be able to report correctly, the sovereign's harangue on this important occasion, more full, doubtless, of significance than royal speeches are wont to be, combining the pathetic, the dictatorial, and the cheering,—farewell and counsel to the body of her people to be left at home, command and encouragement to the party about to attend her to a new settlement.

Mid-day now approaches; the royal speech is ended, the applauding murmurs have subsided, farewells are taken, and the body of emigrants rush forth, headed, or, it may be, followed by their sovereign lady. These, however, we mean not to accompany even to the adjacent bough on which they have settled, most likely for a temporary rest, because we shall see more by keeping to the parent hive, through the portal of which we

must (fairy like) effect a passage at this epoch of interest and importance,—the loss of its queen with a large proportion of its population. Row upon row of hexagonal houses hang suspended in clusters from a common roof. Most of them are occupied, some as store-houses for honey and Bee-bread, others as nurseries for Bee-infancy, and, where not otherwise engaged, as dormitories for Bee-labourers, who, with heads and shoulders ensconced within their cells, are accustomed, at intervals, thus to turn their backs on labour, and recruit for fresh exertions. But few enough are the slumberers now taking their repose; the grand event of the morning has raised a general commotion by no means subsided with the absence of its immediate cause, from which mighty effects are yet about to spring.

From the departure of their reigning monarch and queen mother, our amazonian citizens are, for the present, queenless. What a predicament for a people whose very spring of action is set in motion, as we have seen, by loyalty; but it is an exigence, to meet which they are well provided. Among the common six-sided cells which compose the mass of building, are perceived some half-dozen oval structures, of more than thrice their size, which are occupied as abodes of growing royalty; and within these waxen palaces have been for some weeks nurtured, in different stages of progression towards maturity, as many young princesses, for one of which the vacant throne is destined. For which of them? is the question which priority of birth and emergence from one of the cells of state

is now to settle ; for, at present, all these quiescent candidates for sovereignty, are swathed in the silken shrouds of their second or chrysalis stage of being,—that wherein Bees are designated by the name of *Nymphs*. With heads turned towards the royal apartments, the queenless subjects anxiously await the moment which is to supply their craving for a sovereign. They wait long, but at length (most welcome spectacle!) a royal lady, perfect in the maturity of her full proportions, issues from one of the royal chambers. A loud and joyful hum proclaims her queen, and her subjects are crowding round to pay their ready homage—when, lo ! from another of the state apartments, arrived, like herself, at Bee's and queen's estate, and nearly at the self-same moment, comes forth a second claimant to the regal honours. The rivals catch a glimpse of each other, exchange a glance of angry defiance, then, while the crowd falls back to permit their meeting, rush like she-dragons on one another. Head to head, chest to chest, they strive and grapple, and each has only (in dragon sort) to bend her tail, and fix her venom'd dart, and both will fall victims to each other's stings. But, no ! at this moment, as if seized simultaneously with panic fear, they part and recede from the deadly and too equal strife.

The spectators have hitherto been looking on, inactive, though not mute, having kept up a ceaseless hum ; but now that the royal combatants give way and separate, that hum increases to a perfect uproar, and a few individuals, darting

from the crowd, dare to seize upon the retreating queens and stay their flight,—to hang, even, on their “recreant limbs,” and hold them back from further retreat, as well as from advance. But, see! as if their failing spirits were chafed into new fury by the indignity thus offered, they burst from their subjects’ hold, and rush back to the encounter. Again the issue hangs suspended, but not for long; for now, one of the queenly combatants, more powerful or more skilful than her rival, rises above her, seizes one of her scanty wings, and inflicts on her undefended body a mortal sting. She withdraws her barbed weapon, while her wounded competitor falls down—drags her huge length along—then struggles and expires.

The conqueror’s victory is complete, and now surely she will rest proudly satisfied with her success in fair and equal combat. But what does she next? What means she by approaching rapidly to the nearest of the royal chambers, where still sleeps, unconscious, one of the four remaining nymphs of royal breeding? With vindictive fury she tears from its entrance the silken tapestry by which it is partially defended, and now she thrusts into the aperture her poisoned dart, and inflicts on the helpless occupant a fatal wound. Her thirst for rival blood still rages unabated: another hapless nymph, and yet another dies for its assuagement; and she ceases not from the work of murder until her victims and her strength fail together.

While the ferocious queen is thus employed, what is the behaviour of her surrounding subjects? Do they submit

tamely to the extinction of the royal race? Yes,—and they do more; for though they themselves lay not a sting on the sacred persons of the young princesses, they aid the cruel queen in the completion of her butchery; for no sooner does she quit each scene of her successive assassinations, than dragging from the chamber the body she has left, they hasten to hide from view the evidence of her jealous fury.

The scene above depicted reads, it must be owned, exceedingly tragic, and with such materials for a “Play upon the Passions,” well may Bees have been made to figure as *Dramatis Personæ*, and have had allotted them (to use the words of a modern writer) “a whole play to themselves.” Of this play we know nothing, except that it was written in the reign of Elizabeth, who ought to have been the play-writer’s patron; for what could be more harmonious with her ruling passion than the part enacted by the queenly Bee, made, as we presume, his heroine. She, before whom to allude to a successor, was (in her own words) to “pin up her winding-sheet before her face,”—how would she have borne a rival near her throne?

However, and as must be by this time pretty evident, the things which would be highly unbecoming among men and women, are exceedingly well-ordered among Bees. It seems quite essential to the welfare of a hive, to acknowledge only one sovereign; but as on this single sovereign, in her capacity of general mother, not only the welfare but the very existence of the state depends; and, as over and above, no emigration can

take place without a queen to accompany the swarm, a surplus number of royal nymphs is no less requisite to meet contingences. It will sometimes, however, happen that, notwithstanding such provision, a hive is unexpectedly bereft of its sovereign, when no successor is existing to supply her place. How then do the people act? Why, they do in such a strait, exactly what has been told; and what, in sober seriousness, we will repeat:—for lack of a queen ready-made, they make one.

For the space of several hours grief and consternation reign in place of the defunct sovereign. Then do the murmuring, but not despairing mourners bestir themselves to supply her place. But how are they to do it? Can they mould from their ready material—wax, a royal effigy, and then breathe life into the image? Not so, but they can resort, for the supply of their exigence, to an expedient almost as miraculous. Let us watch their proceedings in the creation of a queen. Why, this work appears only a labour of destruction! Surely they are bereft not only of their sovereign, but also of their senses; and, in a fit of frenzy, are making havoc in the streets of this well-ordered city! Several parties are here and there attacking the six-sided houses, hastily pulling down their waxen walls, regardless of the young which lie cradled within. Out of perhaps four or five of these unhappy nurslings, all but one are sacrificed by those who had heretofore been their careful nurses; but for this one, still in its infant or grub estate, a

changed and brilliant destiny is in store. Save for the unlooked-for accident, which has left the throne without an occupant, this low-born Bee, straitly housed and poorly fed, would have left her cell in size and form and colour, like the rest of its working sisterhood, and, like them, would have led a life of labour: but now, her body will be expanded, her organs developed, her colours brightened, her wings and instinctive virtues alone being curtailed.

The first process of her manufacture is begun already by the destruction going on around her. Her narrow lodging, by the sacrifice of those adjacent, is converted into a spacious chamber allowing full scope for her bodily expansion; and soon will numerous nurses be busy, cramming her with that nutritious stimulating substance called "royal jelly." Then in due season, in ten days or thereabouts, out will come an artificial sovereign, in all respects as good as ever issued from a royal egg.

The above curious process of conversion, though supposed to have been known to the ancients, was first published by Schirach (a French naturalist) in his history of "*La Reine des Abeilles*." Although the fact was ascertained by careful experiment, its assertors were for a long time laughed at, and even abused, in one case, by an opponent who, though he saw nothing incredible in the conversion of plants into animals, deemed it the height of absurdity that the nature of an animal should admit of change.*

* Needham, *Insect Manufacture*, p. 313.

Of Bees, under different aspects, there is yet an infinity to be told. We may look again into the hive, but those who wish to dive deeply into the ways and wonders, the proceedings and policies of its busy inmates, must consult the works of Bee historians. Delightful pages some of them have written, reading much like human history, only more agreeably, because undefiled by moral blots. They tell us, it is true, that Bees go to war like human communities; that strong Bees rob the weak, like human villains; that angry Bees fight single combats, like human duellists; that Bees, well-fed and vigorous, will kill the old and helpless of their labourers. These are points of character, rough and sharp enough it must be owned; but they need not prick us in the reading, when we remember that Bees are but the passive elements of an unerring instinct.



"The aged Professor of the Mesmeric art"



MOTHS AS DESTRUCTIVES.

“Now busily convened upon the bud
That crowns the genial branch, they feast sublime,
And spread their muslin canopy around,
Pavilioned richer than the proudest kings.”

THE grand army of Moth-destructives is now in all the activity of a spring campaign. According to their local distribution, these may be considered as attacking us under four principal divisions, each subdivided into numerous companies. One of them is employed on what we may call the out-works, our fields and forest-trees; a second, coming nearer, spoliates and levies contributions on our gardens; a third, more daring, invades our granaries; while a fourth, boldest of all, attacks

the citadel, and makes havoc in our houses. When we thus speak of Moths as destructives, we refer, of course, to the consuming excesses of their caterpillar youth, wherein Butterflies also, before they have cast off their grosser humours, play an auxiliary part; but the main body of crawling invaders, is made up of those which will become, in due season, fliers, not of the day, but of the night or evening. Of all these it is only the domestic destroyers of the wardrobe which are generally, as Moths, accustomed to be looked on with alarm; because it is with these only, and not often with their fellows of the field, that people are accustomed to identify as one, the consuming crawler and the harmless flutterer.

To begin now with the first division of our numerous army: those defoliating marauders with whom forest trees and hedge-rows are the chief objects of attack. Among the most formidable invaders of the oak are certain caterpillar broods, whose earliest infant steps are accustomed to be taken over the surface of a leaf, which they traverse in marching order. Of these there are some distinguished regiments, often to be seen late in August, drawn up in regular files; and in their brilliant uniforms of scarlet, black, and white, as well as in their marshalled array, requiring no great effort of imagination to liken them to Lilliputian soldiery. Each of these infant legions, in preparatory exercise for operations on a grander scale, strips off its rations from the upper surface of the leaf it traverses, leaving all behind it brown and arid, while all before is fresh and

verdant,—perfect image, in the compass of an oak-leaf, of the progress of a marauding army of a worse description !

Our youthful invaders of the forest are not strong enough to brave an inclement season without shelter. No sooner, therefore, do the changing hues of autumn begin to threaten them with failure of their supplies, than with instinctive foresight they begin to prepare cantonments for the winter ; and long before the arrival of November we may behold our oak-leaf companies snugly housed in branch-suspended barracks, consisting of hammocks spun by themselves of thickly-woven silk. Quartered in these, in social congregation, and bidding defiance to howling winds and nipping frosts, which only serve to rock them to repose, or numb them to torpor, they pass the season of death and rigour ; but with the return of spring, the caterpillar army is again on foot, sharpened in appetite, but not improved in discipline, for instead of, as heretofore, marching in files, and messing together on a single leaf, they disperse like disbanded and insubordinate soldiers, each to forage on the new and tender foliage.

Yet awhile,—perhaps towards the beginning of July,—and we pass beneath some ill-fated oak-tree on which the legion has been actively engaged. Where, now, proud monarch of the woods, are thy verdant honours ? Where that crown of royalty, which, when other leafy coronets are falling around thee, is wont to be only gilded by the suns of autumn, and

still held fast, often glows the richer even for the blasts of winter? That diadem, once accustomed to lord it over the seasons, has been stripped from thy brow by a vile caterpillar crew. But where are the destroyers? After having battened in this sort upon crowned heads, and fattened upon regal spoils, our marauding troops should, each by this time, have grown Napoleon-like in figure as in deed. And so, in their day, they did, their black and scarlet uniforms having for many a time been renewed in order to accommodate their growing greatness: but now their day is over. These ruthless ravagers are nowhere to be seen. But what have we here, resting on the shady side of an oak's spoliated trunk? A little creature of surpassing elegance and beauty; her body seems clothed in a garment of softest swan's down, trimmed at the bottom by a flounce of golden fur; her ample wings of the same unsullied hue, but of more satiny appearance, are bordered by a corresponding fringe; and even her delicate feet are furred or feathered with white nearly to her toes. Her full black eyes, though lacking lustre, do not lack beauty; and rising from her head, in graceful curves, a pair of snow-white plumes, complete her simple, but most elegant attire. We might almost fancy, as we look at this most delicate of creatures, that we had surprised by day-light one of the fairy elves, fabled to hold their moon-light revels beneath the oak. And truly she is not more beautiful than innocent:—a drop of honey-dew is the coarsest nutriment her frame requires, if even air suffice

not to support it. But what has she in common, or what has she to do, with the greedy ruthless strippers of the noble tree she rests on? Everything. She has (with them) a common origin: she is the Gold-tail moth, and they were the Gold-tail caterpillars, of which she once was one, and of a brood of which she will most likely become the parent.

We would fain have been able to carry to an end the analogy between our Insect ravagers of foliage, and the human ravagers of earth; but when the latter have been summoned from the scenes where they have reaped their harvests of devastation, who can picture them as assuming, in a higher sphere, the white and spotless robes of innocence? There remains but little more to be said, *en naturaliste*, descriptive of the Gold-tail, either in its form of destruction or of beauty. In the former, however, that of caterpillar, we shall describe its "black and scarlet uniform" with somewhat more precision, and for a reason which will presently appear. Its body-coat of black velvet, is enlivened by two stripes of brilliant scarlet down the middle of the back, a row of white, resembling embroidery, running along each side; and again below these, two other scarlet lines. The head and six-clawed feet are shining black, the hinder and intermediate legs yellowish, and the whole body beset with tufts of gold-brown hair. Now upon these hairs, which we, since last May, have had good reason to remember, hangs a tale, of which "*Noli me tangere*" is the moral. Before having by experience learnt it, we one

day happened to transpose some of the Gold-tail feeders from a hedge to our collecting-box. The said Gold-tails, in return, transferred to our glove some dozen, perhaps, of their defensive hairs, which, lastly, were re-transferred unconsciously to our face and throat. Irritation and inflammation were presently the consequences, proved by subsequent experiment to have proceeded indubitably from this caterpillar cause, the handling of which, incautiously, or with hands ungloved, may give others, as well as ourselves, occasion for repentance. We would advise our collecting friends to bear this in recollection.

The havoc occasionally wrought by these caterpillars of the Gold-tail, and those of the Brown-tail, a closely-allied moth, has been recorded as matter of history. Réaumur, when travelling between Tours and Paris, in September 1731, found every oak in possession of one of these devastating legions, the foliage looking parched, and embrowned as if by lightning. This was the work of innumerable companies of leaf-marching infantry, such as those we have described. After spinning and spending the winter in their warm silken hammocks, they re-appeared in the ensuing spring, marking their passage through grove and garden, as if with fire and sword. So extensive became the evil, and so mighty the alarm, that the parliament of Paris issued an edict for the raising of conscript armies to exterminate the crawling invaders ; in other words, to compel the people to go forth and “*décheniller les arbres*”: a work, perhaps, beyond human power, but in which they were assisted,

if not anticipated, by the providential auxiliary of a cold rainy May. Some fifty years later, a similar panic, from a similar cause, set England in a ferment of alarm. The extensive ravages of the Brown-tails obtained for them on this occasion the distinction of an historic volume.* The poor in the vicinity of London were employed to cut off their webs (or hammocks) at a shilling a bushel, fourscore of which were said to have been collected at Clapham in one day; and though these devourers are no consumers either of grass or grain, it was ignorantly supposed that, as with the "northern armies" of the East, famine and pestilence were likely to follow in their train, to avert which calamities public prayers were offered up.

Attached to the same division of the caterpillar army, there are certain corps of tiny light infantry, whose white encampments are in some seasons conspicuous upon every hedge in May and June. Merciless leaf-strippers as they are, they would yet seem to have a touch of compassion in their cruelty, inasmuch as they often clothe, in a measure, with their silken tissues, the unfortunate branches which they have reduced to a state of nudity. The regiments of Gold-tail and Brown-tail, after a certain season, are all, as we have seen, accustomed to disband; but those which we are now reviewing never break company at all, while wearing their caterpillar uniforms (grey and black), or even when caparisoned in chrysalidan armour of black and gold.

* By Curtis.

Through May and early June, they are to be seen within, or beside their silken tabernacles, feeding close together, in the form of small grey caterpillars, spotted with black, after which they are to be found as chrysalides, black and yellow, hung pendant, head downwards, and side by side, to the stalks and branches, most frequently of blackthorn, which they have united to strip bare. Each chrysalis is veiled by a thin cocoon of silk, and a web of the same material encloses the whole company, which, however, is partially discernible through both. In July, having then cast off both uniform and armour, these little devastators appear as Ermine Moths,* with silvery black-besprinkled wings, harmless in outward seeming, but the generators of a multitude of mighty mischiefs.

Leaving wood and hedge-row, let us in May, or even in April, walk through the garden, and observe in what manner the second division of our destroying army may be there employed. Have these intrusive devourers shown more respect to the queen of flowers, than to the monarch of the woods? Not a whit; and see here the proof! On almost every rose-bud is a bundle of young leaflets, all drawn from their propriety and, contrary to their own expansive inclination, bound together, usually in a fan-like form, by means of a silken tie. If we pull asunder the leaves thus unwillingly united, we shall find living within and upon them, the agent of their union, a little brown black-headed caterpillar.† Secure from wind and weather, this little

* *Yponomeuta padella*.

† *Lozotenia rosana*.

imp here feasts at leisure, and nips in the bud many an infant rose, whose cradling leaflets, intended for its own protection, only serve to conceal the proceedings of its destroyer.

Turning from rose to lilac, we find numbers of its leaves rolled up, both cross and lengthwise, their return to a natural position being prevented by silken stays or braces. These are the rollings and weavings of a caterpillar,* which in due season will become, as its mother was before it, a small chocolate-coloured moth, like others, a provident parent, who took good care to lay her eggs on the leaf best suited for the exercise of her offspring's ingenuity and appetite.

In the kitchen, no less than in the flower-garden, have these parent moths been busy, at our cost, for their families' support. Cabbages, outwardly skeletons, but still sound at heart, attest the presence of caterpillar ravagers; but let us not be hasty in condemnation. For once, a moth is not at the bottom,—at the beginning, more properly,—of the mischief. The maternal ancestor of these spoliators of the leaves of kale, has been, no doubt, a Cabbage Butterfly, and her devouring brood partaking in a measure of the character of their sun-delighting parent, go to work openly on the exterior of the plant. But it is not so with the destructive progeny of that night-hag moth, known in some places as the *Old Gentlewoman*,† which, darkly dangerous, penetrate and prey on the very heart of the cabbage. In England, and particularly in

* *Lozotania ribeana*.

† *Mamestra brassicæ*.

Wiltshire, these caterpillars are reputed to do extensive damage; and in Germany, woe to the lovers of sour-kROUT! when this lover of cabbages has visited the *potagère* before them. There, whole basketfuls of caterpillars are said, in innocent and ignorant simplicity, to be buried alive, only to rise, living, from the earth; for, as observed by Roësel, a native naturalist, one might as well expect to kill a crab by covering it with seawater, as thus to destroy a caterpillar, which always burrows under ground to change into a chrysalis.

Among the destructives of orchard and kitchen-garden, there is a race of very common brown Moths, yclept the *Lackeys*, so called from the gaudy colouring of their caterpillars, variegated with stripes of blue, black, white, and scarlet.* These, which are among the social feeders, are in some seasons most egregious social pests, helping themselves, something after the manner of the class they are named from, to extravagant board, in return for making a destructive show.

The hop-vine and the burdock are sometimes seen to droop their leaves and stalks without any apparent cause. The rational might suppose them fainting under the influence of summer heat; the ignorant imagine them struck by what they call a blight; the fanciful would have declared, in days of greater superstition, that they had been exposed to some "evil eye" of ghost, or witch, or goblin; and, as it happens, a ghost is really at the bottom of the mystery, for a *Ghost Moth*† in its

* *Clisiocampa Neustria*. † *Hepialus humuli*.

caterpillar shape, is gnawing, unseen, at the root of the insect-haunted plant. This is the White Ghost, which often in the shades of evening, flits across our path, chased by a dark pursuing demon, in the form of a bat, who knows well enough that for him the Ghost Moth is no airy shape, but a substantial reality, (if not of flesh and blood,) of juices and muscles, which, if happily attained, will afford him a delicious supper.

Our gooseberries and currants, plums, pears, apples, apricots, and grapes, are all, both in foliage and in fruit, more or less subject to insect mischiefs, of which parent Moths have been the fertile sources.

Quitting the garden for the homestead and the house, we now come to the third and fourth divisions of our consuming host,—the domestic invaders of our granaries, garments, and good-nature. These belong chiefly to a family of tiny Moths, called *Tinea*, distinguished as much for the ingenious formation of their own habitations or clothing, as for the ravages they are accustomed to commit within and upon ours. There is a certain member of this *Tinea* family* (one of the smallest of the crew) which delights to play her pranks in the farmer's granary. She there deposits perhaps a score of eggs on a corn of wheat or of barley, and no sooner are the caterpillar mischiefs hatched than they disperse, each choosing for himself a single grain to be at once his habitation and his hoard. Gnawing an entrance scarce bigger than a pin-hole, the little devourer takes possession, revels in plenty and security, and

* *Tinea hordei*.

towards autumn, when his stock of flour is exhausted, escapes from the pinch of famine and the nip of frost into the gentle arms of sleep, having previously taken care to convert the hollowed grain into a soft warm dormitory, tapestried with silk. There, in the form of chrysalis, he slumbers through the winter, to burst forth, with the spring, an image of his silver-winged parent.

We have just said that this tiny robber enters his barley-corn through a hole no bigger than that caused by a pin, too small therefore to afford egress to anything in the shape of a Moth, unless assumed by a veritable Fairy; but this seeming difficulty is entirely removed by one of those admirable contrivances, instinctive and prospective, which are so frequently met with in insect economy. The last act of the little caterpillar, before it betakes itself to its winter's nap, is to shape with its jaws a half-cut door-way in the skin of the hollow grain, which, though on the outside appearing whole, presently gives way, when pushed from within, for the exit of the newly winged Moth.

Of the same *Tinea* family, but distinguished from the Grain Moths by their appetite for animal instead of vegetable food, are the well-known Clothes' Moths,*—lovers of fur, wool, tapestry, and dried insect specimens. Most people are well enough acquainted, to their cost, with the destructive operations of these wardrobe pests; but some, possibly, may be ignorant that muffs and silks and stuffs afford food, not only

* *Tinea pellionella*.

for their appetite, but also for their constructive skill : the little marauders being accustomed to make for themselves out of these materials, what we may designate either habitations or clothing, — movable tents or closely fitting body-coats. Marauders though they be, yet they can scarcely be called invaders, since, individually, they can assert a better claim than that of conquest to the territory they lay waste ; for they were born (caterpillars) on the property, and therefore inherit it in right of their lady-mother Moth,—that flitting felon, who through crevice or key-hole intruded her fairy-like form and founded her hidden settlement. This mode and manner of its commencement deserves especial notice, as contradicting completely the notion, still we believe partially entertained, that Moths are self-engendered in the fabrics they infest. As this is not the fact, we have only to enwrap our furry treasures carefully in linen, so as to exclude all possible entrance to the mother Moth, and we never need fear the presence of her caterpillar offspring.

We open a muff-box, drawer, or wardrobe, and first behold with horror the winged offender or offenders ; we buffet them in appeasement of our anger and vexation ; but if we do our worst to them, the worst of the mischief lurks behind, and must be nipped in the egg or in the caterpillar, which, strong in the protection of the aforesaid body-coat, has set at nought our impotent artillery of fumes, brimstone, camphor, bay, or laurel.

Here we have one of the varlets in his self-wrought case !

Let us look and examine how he has contrived to make it. The foundation of his fabric is formed of silk of his own spinning, into which he has thickly interwoven portions of fur, so as to make himself a sort of muff at the expense of ours, taking for his purpose the longer and stiffer hairs, leaving for food the softest and shortest. Upon this, his furry pasture, (as soon as his covering is completed, and not before,) he begins to regale at leisure, an opening being left for the protrusion of his head at one end of his movable encasing garment. He would rather die of hunger than feed uncovered. As its inmate (or wearer) fattens, the case would become, of course, too small; but to meet this growing evil, he lengthens it by working in fresh hairs at each end, at the same time widening it by the insertion of pieces on each side. By moving these little tailors, and setting them to work on various stuffs, we can cause them to make up regularly striped coats of many colours.

The Moth caterpillars of this family which attack wool, tapestry, and the treasures of the cabinet, go to work much in the above manner with the different materials provided ready to their mouths by the prospective care of their mothers. Those of the cabinet scruple not to make free with the wings of their defunct fellow-insects, cutting and clipping them into convenient pieces for the shaping and strengthening of their own body-coats.*

* See *Insect Architecture*, p. 209.

Another little destructive, who is apt to make herself more free than welcome within the precincts of our dwellings, is called the Tabby,* for what reason we cannot exactly tell. These Moths settle in our libraries and larders; and their numerous families are born and nurtured, just also as it may happen, upon books or butter. Their taste, when literary, is, however, like that of many other bibliomaniacs, somewhat superficial, having reference rather to the leather than the language: the binding, rather than the body, of the works is the object of their esteem. A Moth caterpillar of another description dives, however, somewhat deeper into learned lore, and, devouring the page adorned by mildew and black-letter, prizes books in proportion to their mouldiness rather than their merit.

Our Moth destructives have now been traced home to our houses and our cabinets,—to the clothing of our bodies and the works of our hands,—even to the productions of our brains; and by adopting them as emblems we may bring them closer still. What better than the tribe of domestic Moths can serve for images of those evil principles, which, taking possession, we scarce know when or how, fret and defile the robes of innocence? And who of us, alas! ever guards so closely the chinks and crevices of the moral wardrobe, as not to give admission to a few or many of this destructive race?

* *Aglossa pinguinalis*.

THE MOTHS OF THE BANNERS.

A TALE.

The wealth and territories of the noble house of A—— had for upwards of a century been gradually wasting away. In proportion as these diminished, the Roman-catholic chapel attached to the family castle, had declined from its ancient splendour, and on the earldom passing for one generation into a Protestant branch, it was permitted to reach the verge of complete ruin.

But behold, now, the holy edifice under process of restoration. Where the voices of choristers once arose, where the mouldering rubbish lately fell,—there hammers are descending. Where the organ once pealed, where the screech-owl lately hooted,—there masons are busy with the mallet and the chisel. Where clouds of incense were once rolling, where the night-dews lately fell, there whiffs of tobacco are rising through the dilapidated roof. A new order of things is at hand: monumental knights, whose spurs have been cut off by the scythe of time, are being newly invested by the aid of the sculptor's chisel; whilst dames of chaste cold marble are receiving like embellishment from *Carpue*-an restorers of stone noses.

But what is the magic power at whose bidding all these wonders of renovation are produced? The wizard is named Wealth; but from whence, and in what shape has he been

evoked? Has he arisen from the bowels of Lord A——'s wasted property, in shape of a spirit of the mine? Has he descended, heralded by the mockery of sable trappings, from some rich but barren branch collateral? Or has the present Earl realized the golden dream of an alchemising ancestor, and extracted the powerful spirit from the fumes of the crucible? In neither of these shapes, and from neither of these sources, has arisen the magician, who is working such changes in the house of A——. The giant power has appeared as a Slave of the Ring, and has been evoked by a ceremony at the desecrated altar. The noble inheritor of the late Lord A——'s poverty has intermarried with the ignoble heiress of a Lancashire cotton-spinner; and this is why the old chapel is putting on its new garment.

It is evening. The chapel-restorers, whose work is well nigh accomplished, have all departed for the night, and the moon is looking through the great eastern window on the scene of restoration, on the renovated tombs, the reblazoned hatchments, the repolished carvings, the renewed hangings, and, proudly conspicuous over all, on a new banner, which had been raised that morning to replace an old one, of which time, damp, and moths had only left a tattered remnant.

What a looking up of downcast fortunes is displayed and typified in that coat of arms, fresh from the hands of an heraldic tailor. Free from obscuring clouds, that brilliant *Azure*, like a bright blue sky, betokens and gives promise of

pleasant weather : that fiery *Gules* tells of resuscitated splendours, rising Phœnix-like from the ashes of the old ; even that deep-dyed *Sable* shadows forth garments of lustrous newness, in lieu of faded rust ; but most of all significant is that regilded *Or*, an actual emblem of the unseen agency, which has wrought these renovating changes.

All is silent amidst these refurbished vanities and whited sepulchres, now more death-like than before their outward resuscitation ; for during its process, the life which had been harboured in this neighbourhood of mortality, had become extinguished or dislodged. The owls had been driven from the ivy, the swallows from the roof without, the bats from the roof within, the bloated spiders from the mildewed walls, the church-yard beetle and the death-watch from the pavements and the wainscot. It was only in the fragments of the ancient banner, cast down upon the flag-stones just beneath the new, that any token of life remained. Two Moths yet lingered herein,—the only two which had not been put to flight by the noise and stir of renovation. As the destructive pair by turns glided or flitted over the dusty, dishonoured relics,—their silvery wings glancing in the moonlight—they acquired in the absence of all other visible existences, an importance not their own ; and in the eye of superstition might have seemed as spirits burst from the tombs around,—spirits of the brave who had often upreared that banner in its days of pride, and were now risen in sorrow and in anger to bewail its downfall.

Moths, or moth-like spirits,—be they what they might,—the two companions flitted, now here, now there, then meeting, laid their plumed heads together, and commenced (in moth language) a parley which we shall thus interpret:—“Sister,” cried one of them who had just descended on the old banner from a short exploratory flight towards the new; “why art thou thus wilfully determined on keeping to our ruined habitation? ’Tis a hard necessity, I acknowledge, to desert this wasted fabric in which our honourable ancestors were born and died; but it no longer affords us maintenance becoming our exalted rank, and, for the good of my descendants, I have resolved to establish myself up yonder, (and here she looked towards the new banner,) where our consequence will be properly kept up.”—“Consequence! maintenance!” cried the other (scornfully tossing her plumes); “let my family perish rather than subsist on the vulgar mongrel texture of that painted gew-gaw! Deserting this fabric of unmingled silk, pure even to its last attenuated thread, shall we stoop to provide support for our future progeny on a new-fangled tissue, basely intermingled with cotton yarn? I marvel at thy degenerate vanity: ennobled by my presence, these ruins, however far decayed, retain their pristine grandeur; and so long as one particle remains upon another, here do I abide.” “And that will be, sister,” returned the other, “until tomorrow’s dawn, when you and it together will be trampled into dust. But do as you like best, and so farewell, for ever,—

unless, before too late, thou seest thy folly." So saying, the speaker flew up, and settled upon the new standard.

Next morning, when the workmen returning to the chapel, proceeded to sweep away the trampled tatters of the old Banner, they dislodged its sole remaining occupant; and the proud and high-born Moth, after a few irresolute flutters, joined her less pretending sister.

The ruin of the new Banner forthwith commenced, and so it soon proved with the house of A——. Strengthened for awhile by admixture of cotton yarn, and reburnished by plebeian gold, that noble line soon began to exhibit symptoms of decay; for with it, there still continued to exist the old consuming principles, pride of birth and pride of show, which are represented by the Moths of the Banners.



"Two Moths still lingered"



WATER-DEVILS.

"A pond 's a mirrored world, where strong on weak,
Cunning on simple prey."

"WHERE ignorance is bliss, 'tis folly to be wise," is an Epicurean maxim which, on a superficial view, may seem applicable not only to a knowledge of events, wherein its truth may in some measure be allowed, but also to a knowledge of things, wherein it must in all cases be strenuously denied. It is nevertheless certain that a knowledge of many little things, which, in their aggregate and due improvement, make up wisdom, though it usually augments, may in some instances tend to damp our pleasure,—even that quiet bliss, so pure

and innocent, derived from contemplation of the world of nature. It is doubtless, at times, more agreeable to glide indolently over the surface of things in the shallow bark of ignorance, than to explore their depths in the diving-bell of research. This is a reason, amongst others, why the pleasures of childhood, and sometimes those also of the superficial and uneducated, are so vivid and unalloyed; but though to the former we look back with a sigh, and are now and then tempted to regard the latter with a feeling almost akin to envy, few of us would purchase them at the price of a single pearl of mental acquisition.

As we have before observed, nothing can have a greater general tendency to augment our enjoyment of the country, than the study of Entomology; yet one day, as has happened occasionally before, our little learning on the subject of insects served to cast a shade, though it was but a passing one, over the cheerful feelings inspired by early spring. We were out in the morning while the dews yet hung heavy in the shade, a few remaining drops still brightly twinkling in the sun. The day was as fresh as the year, and the face of nature as gay in her renovated youth, as if never embrowned by nigh six thousand summer suns, or pinched and wrinkled by as many winter frosts. Leaving the beaten foot-path across the fields, we pursued, over the grass, a little private track of our own making, towards an old willow pollard, which from long acquaintance, and, we believe, sole discovery and appropriation of certain of its venerable

charms, we considered to the full as much our own property as its legal owner's. To him it is nothing, probably, but a hollow worthless stump :—to us, it is a perfect treasure-house, more full, a thousand times, in its mouldering decay, than it was in its solid strength. The arm of lightning, shivering picturesquely its highest branch, has struck it into coin for the painter's mint ; but it is the gentler hand of 'Time which has moulded it for us into a casket, and prepared it for the reception of living treasures,—aurelia of Moth, or grub of Beetle, enconced beneath the case of rotten wood and bulging bark, or packed in its soft lining, the vegetable mould which fills the hollow of the trunk. But though the season was favourable, we were not in search of insects in the shape of chrysalis, or any other. Our trowel and collecting box were left at home, for we had come out solely for a walk, and with intent to enjoy ourselves as unreflectively as the giddiest flutterer of the tribe just wakened into life. It was not, then, our "hobby" which carried us this time to the willow, neither was it altogether habit : but this, our favourite tree, having grown old without having withal grown crabbed, still offered to its visitors, besides a pleasant shade, a comfortable seat formed by one of the knobby excrescences which bulged from the trunk at a convenient distance from the ground. It presented them, besides, in the clear dark pond it overshadowed, with a looking-glass,—that faithful mirror which from sapling youth to stricken age had reflected its own form, and over which,

like an aged coquette, it had hung closer, and seemingly the more enamoured, as its years advanced. Of the above accommodations, of those at least which afforded rest and shade, we were disposed that morning to avail ourselves, and we sat down not to reflect (unless it were on the happiness around us), but simply to feel, to give ourselves up, as passive recipients, to all the fresh and sweet, peaceful and exhilarating influences of the hour.

Was there a single object within view, or a single sound within hearing, that could possibly awaken one discordant emotion? The sheep in an adjoining field were bleating of peace and good-fellowship; the turtle was repeating her lay of love; and the “shivering note” of the little willow wren, with a thousand others, took up the tale. Pleasure was on the wing in a throng of insect forms, and humming her delight in a chorus of insect voices. Hope was in the season—happiness apparently in everything; and yet, as we sat and looked down upon the smooth surface of the waters,—itself an image of bright tranquillity,—thoughts of violence, cruelty, and destruction took sudden and forcible possession of our mind.

Such a confession, unexplained, might suffice to convict us of something much amiss in that hidden receptacle, the heart; something sadly at variance with all the smiling things around. That thus it has often been we may not, alas! deny; but the fault on the present occasion lay, we verily believe, less with heart than head,—with that specific organ which led us first to

the pursuit of Entomology; for it so happened that certain grains of knowledge picked up therein, had now insinuated themselves between the hitherto smooth surface of our mind and the shining face of outward nature, hindering thus their perfect union. Our eyes, as we have said, were fixed upon the water, which, to the cursory observer, presented nothing but a picture of still life,—of the old willow and the blue sky. To another, examining more closely, the mirrored landscape was not without its moving objects, and these whimsically displaced as well as inverted—a swallow appearing ever and anon to dip its wing in the clouds or foliage, while here and there a fish seemed leaping from the sky. An eye yet more attentive might also have discerned that the surface of the water was traversed by a multitude of queer dark little Insects, with straight lanky bodies and angular limbs, gliding about in all directions. Skimming the glassy mirror like these, but in shape their very antipodes, were certain other little active bodies, oval and convex as an egg, bluish-black, and polished as a steel corslet; now collected in groups, appearing by twos and threes to embrace each other, then starting off singly as if pricked by contact; now motionless,—then whirling swiftly round and round, seeming absolutely tipsy with their native element, or giddy with the joy of existence. Other creatures of curious boat-like form, almost thrice as big as the last, were cutting the water with their oars: these also looked as if they had drunk, but three times deeper, of an intoxicating draught;

for oblivious apparently of the important distinction between head and heels, with the latter upwards and the former immersed, they now hung as it were suspended in the water, then darted off with the celerity of a six-oared cutter. All these living objects, as they met the eye, were in perfect harmony with the surrounding scene of peace. What then could we discern amiss in the pond and its joyous occupants? Actually, we saw little more than what we have attempted to describe, but our smattering of knowledge concerning the purposes and practices of Water-insects, served to throw a dark shade of cruelty and violence, on the one hand,—of suffering and privation on the other, over the moving picture of the pond.

We knew that the Insect world of waters was emphatically a world of destructiveness, and that each of the above described creatures, wheeling about so merrily on the pond's surface, was in pursuit, indeed, of pleasure—but of pleasure derived chiefly from the chase of living prey, or the cannibal delight of devouring it. Neither on the surface only, but down to its lowest depths, the pond was teeming with a carnivorous multitude: some (for Insects) of prodigious size, and of uncouth and frightful shapes; others of almost invisible minuteness, but all alike busy and happy in cutting off the happiness of their fellows. Well! there was nothing in this greatly discordant with the general order of things, natural and moral; but for this very reason the train of thinking it suggested soon brought disturbance to that sensation of peacefulness

which all besides encouraged, and we rose from our willow chair almost wishing that we had known nothing of Entomology.

Yet that was a foolish wish, sprung of a foolish feeling, such as all feelings are which have the slightest tendency to make us dissatisfied with the regulations of Divine Wisdom, however they may seem to jar upon what we are pleased to consider our finer sensibilities. It is certainly no pleasant reflection that innumerable tribes of earth, and sea, and air (ourselves included) live by the death of others; the less, therefore, we dwell upon it the better, especially with any view to explanation of a fact which stands in intimate connection with the origin of evil,—that dark mystery which we are never likely to penetrate, except in the light of heaven. When, however, the subject of mutual destruction does by accident come across our mind, or our path, a few reconciling thoughts on it may be safely sought for, and readily found.

To apply them only to our proper subject, the Insect *Carnivori* of the waters,—as Destroyers, we may subdue our repugnance to them by the thought that there is no guilt in their destructiveness;—as Destroyed, we may keep our pity for them in wholesome check by believing that there is little suffering in their destruction;—that with the tenants of our little deep beneath the willow, it may be as a pious and enlightened writer* has supposed it with the inhabitants of the great deep of ocean. “Pain,” says our author, speaking of

* Sharon Turner.

fishes, "has but little or brief residence among them; for even when absorbed by the larger ones for nutriment, they are swallowed without laceration, and entombed in darkness and death before they are well conscious of their change of situation. Death, therefore, is to them what the Druids in their mythological theories sang it to be to man,

A change which can but for a moment last,
A point between the future and the past."

By the same writer it is added, in a note, that the Jewish Rabbins estimated so highly the general comfort of fish existence, that one of them, in describing their doctrine of the transmigration of souls, inculcates that those of the righteous whose conversation is with the Lord, and who only need a purification, go into fish. This, and other like wild imaginations, may have originated partly in the desire to account for, and reconcile with our ideas of justice, the suffering, in any sort, of the harmless tribes, in consequence of their furnishing support to the carnivorous. The deaths of the former by violence, instead of being viewed as a condition of their being, have been sometimes regarded in the light of punishment, and since such could not be inflicted justly on other than a responsible agent, the forms of brutes have been assigned to human spirits in a state of penalty or purgation. Others have gone further, and adopted from the Jesuit, Father Bougeaut, a notion that all animals, save the human, are animated by evil spirits or devils,—thus retained, till the general judgment, in

ignominious fleshy prisons, and compelled meanwhile to be conducive to man's use and pleasure. This, as they would have it, gives a satisfactory solution of the carnivorous propensities of some,—the seemingly undeserved and needlessly inflicted sufferings of others,—as well as of the evident proofs of reasoning mind, as distinguished from instinct, observable in every class of the brute creation, from the half-reasoning elephant to the socially-communicating ant. In answer to one of the objections against his theory,—that of the delight taken by many persons of sense and religion in domestic beasts and birds, the Father adds: “What care we whether it be a devil or any other creature that amuses us! The thought of it, far from shocking, pleases me mightily, and I with gratitude admire the goodness of the Creator, who gave me so many little imps to serve and entertain me.” Herein, we confess, that we are no admirers of the worthy Jesuit's taste, any more than a proselyte to his doctrine. Its refutation may be read in the loving eye of our faithful dog, and heard in the greeting chirp of our pet canary; it is warbled by the nightingale, cooed by the dove, and hummed by the insect voices which fill the summer air with life and gladness.

To return now to our own Insect “Devils” of the pond, with whom (having already shown up their evil propensities) there is no harm in making a little farther acquaintance. First, for those black lanky looking creatures gliding about the water's surface:—Of these our pond (as most others)

affords two varieties ; both of a spare and slender make, but one so delicately formed that even its body is scarcely thicker than a line. This line is broken, however, by two prominent hemispheric eyes, which though set really in the pigmy's monstrously long head, appear to be in the middle of his slender body. He is usually wingless, or with only short parallel clytra. This is the *Hydrometa stagnorum*, or Water Measurer, a common frequenter, from March to August, of every ditch as well as pond, where he glides about to murder the innocent.

The fellow-destroyer* by which this is usually accompanied, is a "bird of the same dark feather," only considerably more bulky, and furnished with close-setting wings. He rows himself merrily along by his hinder feet, the sides of his body being rendered impervious to water by a coat of silvery hairs. Somewhat resembling him in habits and in form, though with a body far less lean and long, and with its darker hues enlivened by red and white, is another gliding or rowing destructive, completing the "fatal three," which, insects themselves, are for ever cutting short the slender threads of insect life. It was not this morning visible on the willow pond ; and though we have at times observed it on still waters, it usually prefers to buffet the running stream, to glide, not with, but against the current. This is known to naturalists as the *Velia rivulorum*.

A word, now, for that little whirling devil, which, albeit black in hue, is of less satanic seeming than the above ; for in

* *Gerris lacustris*.

place of long rigid limbs and angular movements, he displays in his circular gyrations and oval form, something of beauty, in his polished corslet, something of brightness, and in his social sportiveness, something of good fellowship. He and his merry mates,—not the less destroyers, are the little Whirlwigs,* those bluish-black diamond-like Beetles, which few can have failed to notice, whirling about on every pool. Their playful evolutions would seem, however, but a *passe-temps* in intervals of sterner business, that of putting a full and fatal stop to the sports of other water-revellers, weaker than themselves.

That topsy-turvy imp of darkness, which in proportion to its superior magnitude creates yet greater ravages among his fellows of the flood (those before named included) is the Water-Boatman.† Swimming on his back, legs upwards, tail touching the surface, head inclined downwards, he waits, motionless, on the look-out for prey, till, on the least alarm, he rows off with infinite speed by help of the hairy fringe, with which his hinder feet are thickly bordered. As well as with oars, our boatman is provided with wings, useless in water; but serving in case of drought, and failure, in consequence, of his native element, as a means of transport to some new scene of violence.

But these which appear upon the surface are only a few, and not the most terrible amongst the devourers of pond and streamlet, for gliding through the depths below, or lurking

* *Gyrinus natator*.

† *Nolonecta glauca*, or *furcata*.

crocodile-like, within the mud or water-weeds, a multitude of fierce and frightful insects, some in a state of maturity, others in progressive stages, live solely by destruction. One of these is the Water-Scorpion.* Stretching out its long lobster-like fore-arms, which are terminated each by a sharp claw, serving the purpose of a hand, it seizes and holds fast its prey, which it then pierces with its sharp beak or proboscis,—a pointed hollow weapon, serving the further purpose of sucking the juices of its struggling victim. So thoroughly savage is the nature of this creature, that he would seem to destroy for destroying sake; and it is related by Kirby that one of them, put into a basin with several tadpoles, killed all, and ate none.

The prevailing hue of this insect murderer is gloomy as his trade; his head, shoulders, limbs, and wing-cases, being of a blackish-brown, hardly distinguishable from the mud in which he loves to lurk; but when his wings are expanded, they display (also in unison with his occupation) a blood-red body, terminated by a forked tail. It is only in the gloom of evening twilight that he creeps from his native element to hide within the dark covert of the water-weeds, or thence rising, to cut through the night air in search of some new abode. Notwithstanding the capacity of its carnivorous maw, this creature is remarkable for the excessive flatness of its body.

All the aquatic cannibals above named are insects in the last, or adult stage of their existence; but the two very remark-

* *Nepa cinerea*.

able destroyers we shall now describe, have yet to put on other and more perfect forms, although their carnivorous capabilities are fully developed. A common inhabitant of ponds, or of the mud at their bottoms, is an ugly-looking animal, with a light brown wingless body, and six legs, having the air and movements of a little reptile more than of an insect. This creature has a face, or to speak more correctly, a physiognomic appendage, to behold the like of which on a larger scale, and mounted on the shoulders of a man, would suffice, Medusa-like, to turn flesh and blood to stone. Emboldened, however, by his want of bulk, let us look at this monster in miniature, as he works death for his living, at the bottom of a pond ; or, if that be difficult, at the bottom of a basin, furnished with pond-water, mud, and proper prey. It needs hardly, however, be observed, that the sight of killing, in what form soever, ought not to be pleasant, and is not profitable ; hardly to be sought for, even for the sake of the curious machinery and *modus operandi* of our insect butcher. At all events, our younger readers would do well to rest satisfied with the description of his murderous mechanism, and choose more agreeable subjects for their practical observations. Well, his great projecting eyes, always on the watch for something eager to devour, have elected a chosen victim. With cat-like stealth, he crawls towards it. Now he is close upon his prey, and his next movement will surely be to seize and grasp it with the foremost pair of his hairy legs. But, what now ? Surely a mask is falling from

the caitiff's face ! Yes, a veritable mask, which has hidden, hitherto, both from us, and from his victim, the grimmest half of his grim visage. He has dropped his vizard but not entirely, for it still hangs pendent from his chin. And now, do we see aright ? the mask, as if touched by the wand of Harlequin, assumes another shape ; it has changed into a sort of toothed and jointed trap, which opens, then closes on its prey, an unlucky tiny tadpole, which is brought, wriggling, into convenient reach of the jaws ready to receive him. But this trap-like mask is so curious a machine, and so dissimilar to ought besides, that we must borrow* a description of it more explanatory than our own.

“Conceive your under lip to be horny instead of fleshy, and to be elongated perpendicularly downwards, so as to wrap over your chin, and extend to its bottom ; that this elongation is there expanded into a triangular convex plate, attached to it by a joint, so as to bend upwards again and fold over the face as high as the nose, concealing not only the chin and the first-mentioned elongation, but the mouth and part of the cheeks ; conceive, moreover, that to the end of this last-mentioned plate are fixed two other convex ones, so broad as to cover the nose and temples ; that these can open at pleasure transversely, like a pair of jaws, so as to expose the nose and mouth, and that their inner edges, where they meet, are cut into numerous short teeth or spines, or armed with one or more

* Insect Transformations, p. 163.

sharp claws, you will then have as accurate an idea as my powers of description can give of the strange conformation of the under lip in the larvæ of these insects, which conceals the mouth and face precisely as I have supposed a similar construction of your lip would do yours. When at rest, this mask applies close to, and covers the face; when they would make use of it, they unfold it like an arm, catch the prey at which they aim by means of the mandibuliform plates, and then partly refold it so as to hold the prey to the mouth in the most convenient position for operation of the two pair of jaws with which they are provided." Réaumur proposes, jokingly, the adoption by masqueraders of some such physiognomic apparatus wherewith to astonish the "Demoiselles," and win their admiring horror by putting it into devouring action at the supper-table.

Let us now leave our crawling masked assassin to wallow in mud and murder at the bottom of his pond, and delight our eyes by looking at an insect of surpassing brilliancy and beauty, disporting on the wing above the water. Its graceful shape, brilliant colours, and glittering gauzy wings, have won it from the gallant French the appellation of *Demoiselle*. Among ourselves it is known better by the names of Horse-stinger and Dragon-Fly. The first is a misnomer, because, to horses, it is entirely harmless; but amongst the insect crew it is a veritable dragon, to the full, as fierce and cruel as our murderer in the mask. No wonder! for it is his very self,—one, at least, of

his very kind. He has laid aside his mask, and therewith his grub estate, but retains, as a perfected and brilliant Fly, the very same propensities as when an unsightly crawler,—propensities exercised, now, in the devouring of Butterflies in air, instead of Tadpoles in water.

The arch-fiend with which we shall close our abridged list of *Water Devils*, is the British *Hydrophilus*, the devil *par excellence* of the solar microscope, and of exhibitions,—a species of Water-Beetle, in its first or larva stage of being. This creature exceeds, perhaps, all its carnivorous fellows in size (measuring, when at maturity, an inch and a half); in courage as attacking even small fish, and other animals larger than itself; in ferocity, and in the possession of destructive weapons, powerful, remarkably numerous, and singularly adapted to their designed purpose. Broods of these murderers have been passing the winter in embryo, that is, in the egg, enwrapped like innocents in silken coverlets, or, to speak more correctly, in silken balls, suspended, cradle-like, to the stems of submerged water-weeds. These are now, however, detached from their supports, and may be seen floating on the surface of stagnant pools, exposed to the genial influence of the sun. By this, if not already, they will be soon awakened into life, when their first employment will be to gnaw a hole in their nests, whence they will descend to the bottom of the water, each a walking and swimming little animal, with six legs, a set of hairy, fin-like appendages, and a bi-forked tail. But most conspi-

cuous and notable of all its appurtenances are those which arm the head, the large strong jaws curved and pointed, opening and shutting like a pair of forceps, with an apparatus of other instruments, smaller and finer, to assist in piercing, tearing, masticating, and sucking the juices of its victims, which comprise, as the infant destroyer advances to maturity, almost every aquatic insect within reach ;—and in failure of these, the brethren of one common nest will turn their fangs upon each other. On a fine sunny day, these insect sharks arise to the surface of the water where they delight to bask. If watched, they remain motionless, with their jaws extended, and if a stick be presented to them, they will seize it, and will sometimes, it is said, permit themselves to be cut to pieces rather than relinquish their hold. After the completion of its life as a larva, the *Hydrophilus* immures itself in a cell of its own formation, near the water's edge, and after passing through the next stage of pupa or chrysalis, emerges a perfect Beetle. In this form it is sometimes found by day sitting on plants beside the water, which, with the gloomy habits of its tribe, it deserts for the air only by night. This creature of darkness and ferocity (or one closely allied to it *) is said, when arrived at maturity, to outgrow its carnivorous propensities, and in lieu of animal and living prey, to content itself, when a Beetle, with the vegetable growth of ponds and ditches.†

* *Hydrophilus caraboides*, Curtis.

† For fuller description of this insect, see Microscopic Cabinet, Goring and Pritchard.

We have dwelt perhaps too long on the doings of these Water-devils, and now dismiss them with the reconciling thought, that the world will forsake in maturity every savage propensity, natural and moral. The prophecies of Holy Writ give abundant assurance that when wars and vices depart from among mankind, the predatory system will also cease within the animal kingdom. The "wolf shall dwell with the lamb, and the leopard shall lie down with the kid." And that this will be accomplished, even to the letter, we do not, the less believe, because we cannot comprehend in what manner. Then may regenerate man be permitted to bring a new life of peacefulness into the worlds within worlds of animated nature. Then may some drops of humanizing gentleness fall even into that little world of waters over whose deeds of cruelty now droops our favourite willow.



"He rams off with infinite speed"



BUTTERFLIES IN GENERAL.

“What more felicitie can fall to creature
Than to enjoy delight with libertie,
And to be lord of all the workes of nature,
To reigne in the aire from th’earthe to highest skye,
To feed on flowers and weedes of glorious feature.”

WORDSWORTH has apostrophized a Butterfly as “Historian of his infancy,” and thousands must have felt, with the poet, that at sight of Butterflies the events of childhood have come fresh to memory, and they have seemed to look again upon the pages of opening life,—those sunny pages which the blue and crimson, gold and silver, of the Butterfly’s wing, have

helped so often to illuminate. In return for having thus assisted to chronicle our own brightest days, we are about to give a sketch of Butterflies in general and of their prevailing characteristics, with notices of such incidents as happen nearly alike to all. We thought once, indeed, of selecting some certain individual from this family of distinguished flutterers, with the view of making it the subject of a biographical notice. For instance, "The Life, Court, and Times of a Purple Emperor," or "The Memoirs and Correspondence of a Painted Lady," would have sounded well enough; but where in the life of a Butterfly should we have found the highly seasoned requisites for pleasing public taste,—those buried and resuscitated scandals, those unblushing falsehoods, covered or disguised by rouge and rank, which make up the greater portion of royal and noble biography. But setting these aside, what other materials, it may be inquired, could be supplied to the manufacturer of Memoirs by the life of an idle Butterfly? Abundance, we reply; an ample sufficiency of mingled yarn for the weaving of a tissue quite as durable (to say nothing of beauty) as those which are spun daily out of lives as trifling, and much more uneventful. Sunshine and shade, love and war, accidents by flood and field, hair-breadth escapes from flying fire-eyed dragons,—these, and numberless vicissitudes varied as their many-coloured pinions, mark, and to them may seemingly extend to years, the span of days or weeks allotted to our glorious flutterers.

Little, perhaps, did the author of our opening motto,—little the poet, who declares that

“From flower to flower, on balmy gales to fly,
Is all they have to do beneath the radiant sky,”—

seem to have thought upon the manifold changes and chances of papilionaceous life. Why, then, did we not edit the *Life of a Butterfly*? For the simple reason, that being more scrupulous than some of our editorial contemporaries, we did not like to represent as individual experiences, incidents which might, and daily do, occur to Butterflies in general; but which we could not vouch for as having actually happened to the subject of our Memoir. Therefore, until we are enabled by help of wings to attend the Purple Emperor in his progresses through air, and are sufficiently versed in the antennal language (as carried on by touch and signal) to become a spy upon the Painted Lady in her hours of supposed privacy, and until from our knowledge of her mode of writing, as inscribed on leaves, we are enabled to fathom the secrets of her correspondence,—until then, we must suspend the contemplated work to which at present we confess ourselves incompetent.

We shall be content, in the meanwhile, to give the history of Butterflies in general, as it has been noted down and recorded, not in one, but in numerous individuals of the race. Let it not, however, be imagined that the history of all will serve for that of one, or that of one for all. There are among

them, according to their various tribes and families, grand distinctions not only of dress but of manners also ; besides which, every individual has, we doubt not, a character of its own.

Thoughts on Butterflies always bring with them thoughts on flowers. We have viewed them already in some of their mutual relations ; but under this, their combined aspect, they are both so doubly pleasant to look upon, that we must trace here a few of their corresponding features,—some of them perhaps for a second time. Flowers seem, as it were, to impart a portion of their own characteristics to all things that frequent them. This is peculiarly exemplified in the Butterfly, which must be regarded, *par excellence*, as the Insect of Flowers, and a Flower-like Insect, gay and innocent, made after a floral pattern, and coloured after floral hues. But even with the insect families which are usually dark and repulsive, that, for instance, of Cockroaches, which are for the most part black or brown, the few species which resort to flowers are gaily coloured. What a contrast also between the dark loathsome in-door Spider, and their prettily painted, green and red, and white and yellow brethren of the field and garden, which seek their prey among the flowers ; while more striking still, is the difference between the wingless disgusting plague of cities, and the elegantly formed, brightly coloured, winged Bugs, which are common frequenters of the parterre. Whether this be imputed to the effect of light, or assigned poetically to

the breathing influence of a flowery atmosphere, and the tendency of all things to produce their similitudes, there lies beneath the natural fact a moral analogy of application to ourselves.

Let us quote to this effect from the Herbal of a quaint old writer* on the influence of flowers :—"Through their beauty and variety of colour and exquisite forme, they do bring to a liberal and gentle minde the remembrance of honestie, comelinesse, and all kinds of virtues ; for it would be an unseemly thing (as a certain wise man saith) for him that doth look upon and handle faire and beautiful things, and who frequenteth and is conversant in faire and beautiful places, to have his mind not faire alsoe."

However few may thus read their moral, and open their hearts for the reception of its sweetness, we might almost say that all but life haters love flowers, and for the same reasons, nearly all, though haters of Insects in general, love Butterflies. We almost indeed seem to look upon them as animated members of the floral kingdom, and regard them much in like manner according to the progressive stages of our lives. In childhood, we long for and pursue them ; in youth, we poetize them ; in manhood, scarcely heed them ; in age, begin to find in them, perhaps, alas ! for the first time, sermons of warning, or emblems of hope. The following with other beautiful lines from an American poet, were written upon

* Gerard.

Flowers, but with the substitution of only a single word, do they not apply precisely unto Butterflies, which like them are wont to

“ ——— expand their light and soul-like wings,
Teaching us by most persuasive reasons
How akin they are to human things.

And with child-like credulous affection,
We behold those tender (*wings*) expand,
Emblems of our own great resurrection,
Emblems of the bright and better land.”

(See *Frontispiece*.)

But it is not a mere poetic, much less a fanciful, analogy which links the Butterfly by a thousand golden chains with the loveliest productions of the vegetable world. The leaf and the Caterpillar, the flower and the Butterfly, seem, as it has been said, made for each other; though we must certainly admit that the plant would, to all appearance, do much better without the insect, than the insect without the plant, which furnishes the Caterpillar with sustenance, and the Butterfly with a velvet cushion for repose, or a nectared cup for refreshment.

Independently of this bond of use (more mutual perhaps than we are at present able to discern), there has been traced by naturalists an intimate analogy of states and developments between the Lepidopterous Insect and the perfect vegetable. The Caterpillar, disclosed from the egg, encases in its various skins the gradually expanding form of the future Butterfly; as the plant, burst from the seed or bulb, encloses in its

successive integuments (of root, stalk, and floral leaves), the flower and fruit in process of formation. The chrysalis, that shroud or cover which at once protects and imprisons the winged creature it encloses, finds its correspondence in the defensive calyx which enwraps the delicate corolla. Both burst from their envelopes in perfect form,—the Insect to die, the flower to fade, soon after having provided for the continuance of their kind.

In the habits, no less than in the structure, of the Butterfly and the flower, there is observable no slight degree of correspondence. In the gloom of night or of cloudy weather, the Insect folds its wings, the flower its wing-like petals; and as flowers love and turn towards the sun, so Butterflies open their pinions to receive his welcome rays,—sometimes alternately closing them in fan-like motion, to temper probably his too ardent beams. Sometimes, with the devoted worship of the sun-flower, a Butterfly will follow the God of Day in his ascension and decline. Our Purple Emperor* mounts from his leafy throne, the top of an oak or elm tree, to a height invisible and highest under a noonday sun; then, redescending, lowers his flight with the setting luminary.

As the blowing of flowers can be forced or retarded by artificial heat or cold, so it has been found with the emergence of Butterflies. Réaumur made many successful experiments, by aid of hot-houses and hens, upon various chrysalides,

* *Apatura Iris*.

from which he caused the premature evolvment of the perfect insect, and proposed by employment of the same means on an extensive scale, to cause summer flowers and summer flutterers to appear together in the midst of winter.

Darwin had a pretty fancy that Butterflies usually resemble in colour the flowers they are most accustomed to frequent. The poet-naturalist carried this notion doubtless beyond nature, but the idea is one which seems to shoot less wide of its mark than many aimed from the Litchfield long-bow. There is a very large proportion of white and yellow flowers which we see visited, perhaps, most frequently, by an equally large proportion of white and yellowish Butterflies, owing probably to the preponderance of each. The greater number of blue Butterflies are certainly, however, accustomed to frequent the blue flowers most abounding in chalky soils; and the rich tone of colouring in our autumn flowers harmonizes well with that of autumn Butterflies. But whether they be or be not dyed, usually, after the colours of their favorite blossoms, it seems agreed on all hands that the Butterfly form and its fluttering habiliments are always fashioned after the floral pattern, as it prevails in the papilionaceous families of the vegetable world.

We might continue at greater length our remarks on Butterflies as connected with flowers, which make verily part and parcel of their existence, but space forbids us; and now returning to their relations of use, we must notice somewhat

more minutely than most people, perhaps, are in the habit of doing, the manner in which the delicate delights of rest and refreshment, provided for them by the flower, are turned to account by these luxurious insects. Let us follow one to the garden,

“Where, he arriving, round about doth flie
 From bed to bed, from one to t’other border,
 And takes survey with curious busy eye,
 Of every flower and herbe there set in order;
 Now this, now that, he tasteth tenderly,
 Yet none of these he rudely doth disorder,
 Ne with his feete their silken leaves deface,
 But pastures on the pleasures of each place.”

Behold him seated on his velvet cushion, the corolla of an aster or a single dahlia; in its centre, his table of regalement, on which a whole service of golden vases are set before him in due order. His long spiral tongue has hitherto lain coiled betwixt two side appendages, but now unrolling, he plunges it to the bottom of a chosen chalice, then partially recurves, and indraws his honied draught through the tube-like sucker. Again and again, he quaffs like an “Alderman”* as he is. We know him by his bulk and the richness of his furred and velvet robes, scarlet and black, relieved with white. But see how the rights and pleasures even of an Alderman Butterfly are open to invasion! Look at that impertinent prying “Argus,”† tired of his rustic fare in heath or meadow, and hovering overhead, allured seemingly by sight or scent of richer dainties wherein art has had a finger. Down he lights

* *Vanessa Atalanta*, Alderman or Red Admiral Butterfly.

† *Polyommatus Argus*, *P. Alexis*, Common Blue Butterfly.

and seats himself beside the dahlia table, an unbidden guest. The Alderman's translucent eye from red grows redder, and his gorgeous robes shake with indignation as he sees the bold intruder unroll his liquorish tongue and dip it into one of his own appropriated cups. Still, however, he restrains his ire within the bounds of Aldermanic dignity or prudence; he attempts not to drive the invader from his invaded board. But, can it be possible? the little Argus, not content with a dinner upon sufferance, has actually become the assailant of his unwilling host. He closes his blue wings, opening, in the act, a hundred eyes, and then tries with his pigmy body to dislodge, by shoving, the corporation of the Alderman. But the patience of the latter, and his prudence, are now put to flight. Both start from table, mutually buffet and ascend in air, mounting higher and higher as their choler rises, each growing hotter and hotter in his progress towards the mid-day sun. Now blue! now red is uppermost! Now the light weight and azure pinions of the little Argus—now the heavy body and flapping wings of the burly Alderman! Which will be the gainer of the day? For once, Might and Right are both upon a side, and for that reason, doubtless, Might seems worsted. The combatants have risen so high that they are almost beyond our dazzled sight——but now behold, descending and alone, the little blue aggressor. He has driven his opponent from the aerial field as well as from his honied fare, which he now returns to appropriate and discuss

at leisure as he resumes his seat upon the dahlia's vacant velvet. The bold urchin has, however, paid forfeit for his rudeness and pugnacity. When he first alighted down beside the Alderman, he was a Beau Butterfly of the first water,—but now, his blue bravery, late so bright and glossy, all worn and torn and jagged, he looks what he is, an impertinent, pilfering, quarrelsome little varlet.

Besides the above (the Blue Argus), Mr. Knapp in his “Journal of a Naturalist,” notices as “contentious animals, the common White Butterfly* of our gardens, and the small Copper,† as quarrelsome as he is handsome,—often fighting even with his kindred, when he meets a fellow on a September knot of China-asters.” It has been noticed by the same observer, that clouds seem to abate the ardour of contending Butterflies, and that not unfrequently when two are engaged on high, in ardent and unheeding strife, the arrival of a third party in the shape of a hungry bird at once settles the difference of the pugnacious pair by their conversion into a flying meal. But the most knowing among naturalists, as well as those of other professions, are for ever differing; and these Butterfly struggles, viewed by the writer last mentioned in the light of combats, have been regarded by another ‡ in the more pleasant one of pastime,—considered merely as frolicsome exuberances of the vital principle played on by the buoyant air, expanded by the sunshine in their wings and bodies.

* *Pontia Brassicae*. † *Lycæna Phleas*. ‡ Rennie.

Neither are their buffetings considered by Mr. Rennie so rude by half as they appear, and he urges against the probability of their angry purpose the number of the insects (sometimes as many as five or six) seen together in collision. Of this argument, however, we scarcely see the force, unless it could be proved that Butterflies, being wiser than men, never took sides or part in each other's quarrels. But as no mortal consequences have ever, as we know of, been seen to result from these rencounters in the air, we must perhaps leave unanswered the question of their dubious meaning,—that of rough play, or gentle warfare,—till the progress of phrenology enables us to pronounce safely on the amount of combativeness in a Butterfly's skull. Meanwhile, we would much rather incline to the pacific notion, and in poetic justice admit our favourite, (until we know to the contrary) to be

“A beautiful creature
That is gentle by nature ;”

even though by so doing we throw a double stigma, for his pursuit and devourment, upon our favourite robin.

Butterflies are said to be the thirstiest creatures (save Ants and Crickets) of all the Insect community ; but however they may get tipsy, perhaps quarrelsome, over their cups of honied wine, it would appear that they are the best friends possible, when, as is no uncommon occurrence, they meet together in numerous water-drinking assemblies. Like a row of white-muslin Misses at a Temperance Tea-Meeting, the small white

Butterflies are often in hot weather to be seen sitting, side by side, on the margin of a half-dry pond, where

“ — in the same bathing their tender feet,”

they are enabled at once to quench their thirst for water and, very likely, for gossip. In their choice of the former they are, however, by no means so refined as the elegance of their appearance would lead one to imagine; for in like manner as we have known delicate young ladies, as great lovers of London Porter as of sparkling Champagne or of the crystal spring, so the stagnant muddy pool or the dusty sprinkling of a metropolitan road, would seem, to all appearance, as grateful to the Butterfly palate as the translucent rivulet or cooling fountain.

In these social assemblages but few females are accustomed to be present, though no law of absolute exclusion would seem to exist against them, as in the aerial dances of the Gnat. The prevailing absence of lady Butterflies from these water-drinking *réunions* has been assigned rather to their habits, which being of a most laudable stay-at-home character, do not lead them to those flights in the burning sun which excite the thirst of their roving partners. We should be the more unjust in passing over without due praise this quiet domesticity of the female Butterfly, because it would never seem with her, as with some of her Moth cousins, a mere virtue of necessity. The latter possess, in some cases, only apologies for wings, or such as are adequate only to the very brief support of their heavy

bodies ; whereas the Butterfly, maid or matron, is furnished with a pair to the full as ample as those of her suitor or her mate.

Not always satisfied with their transits from field to field and flower to flower, certain families of the Butterfly race seem seized occasionally with a perfect mania for visiting countries beyond the sea ; but whether among the immense assemblages which collect for this purpose, females are included, would seem a doubtful point. By staying, as usual, at home, they would at all events be no losers on such occasions, the greater number of winged adventurers being supposed to perish in their passage across the ocean.

Many Butterflies have a wide geographical range, and one of them, the Painted Lady,* is remarkable for being a denizen of each quarter of the globe. With us, this elegant insect is in some seasons plentiful, in others rare. Its spiny caterpillar is a feeder on spiny leaves, those chiefly of the great spear-thistle. Thistles, by the way, even way-side thistles, acquire in our sight a thousand piquant charms as soon as we begin to notice insects. We have just seen in its leaves the nursery of the Painted Lady, one of our prettiest Butterflies, and they afford the same to one of our prettiest Beetles, the little green Tortoise. Its honey-scented flower is a load-star of attraction to a humming host of *Hymenoptera*, while to some of them, most often to the red-hipped Humble-bee, it affords

* *Cynthia Cardui*.

also a purple couch whereupon at drowsy evening, as in the fading time of year, we are sure almost to catch him napping. When the purple of the flowers has faded also, the head of a thistle remains still a tower of strength, for defence not alone of vegetable life : sometimes its bristling out-works may protect only its own seeds, but most often they enclose also an insect garrison, to which this bitter corn supplies provisions. Minute grubs and tiny caterpillars, bright scarlet and brownish white, thus live by thousands within the prickly calyx, till in lieu of the seed and its feathery down, devoured and arrested, they themselves are seen floating through the air in the winged forms of downy Moth or glittering Fly.

For the most part, the wings of both sexes among Butterflies are adorned alike, but sometimes, as with the feathered race, there is a difference clearly not to the lady's advantage, in the painting of her pigmy plumes. The pretty Orange-Tip,* that well-known sporter amidst sylvan glades and meadows, has at home occasionally beside him a white-winged partner, bearing his name, but without a colour of pretension to the title. The brilliant blue of our little Argus, of fighting celebrity, is deepened in his lady to a purplish brown ; while the bright yellow of the Brimstone beau† fades in his modest belle to a greenish white. Linnæus not aware, it is supposed, of this occasional difference of colour in the opposite sexes of Butterflies, has sometimes strangely put asunder what nature joins together, representing,

* *Pontia cardamines*.

† *Gonapterix rhamni*.

perhaps, the husband as a Trojan, and making his wife figure in the ranks of the opposing Grecians, or *vice versâ*.

To talk of Greeks and Trojans in connection with Butterflies, may require a word of explanation to the uninitiated. To such then be it known that, for the convenience of arrangement, the great Swedish naturalist founded on fabulous and ancient history an allegorical system, wherein Butterflies, divided into sections of Greeks and Trojans, were named after their deities, princes, heroes, nymphs, and plebeians, — an ingenious and useful plan, but sometimes involving a curious contradiction and unfitness of terms. It would seem, notwithstanding, that the imaginative inventor of this system sought for, and in many instances found, a sort of emblematic personal analogy between his Butterfly and its classic namesake. The beautiful *Papilio Ulyssis* * bears, for instance, on its wings, a radiating cerulean disk, which being surrounded on every side by a margin of intense black, gives the idea of light shining in darkness, and this is supposed, not improbably, to have suggested to Linnæus the insect's fitness to symbolize the wisest of the Greeks in an age of barbarism. The *Papilio Priamus* in all its regal yet subdued splendor of purple, black, and green, is no unsuited representative of the unhappy Trojan king; or the yet more glorious *Papilio Menelaus* in his azure robes, of the magnificent husband of the beauteous Helen; while the blood-red *Nero* may be allowed to symbolize the sanguinary Roman Emperor.

* A native of India.

Perhaps in the whole range of nature there is no object of equal size which presents so much combined splendour, variety, and elegance, as a Butterfly's wing,

"Where colours blend in ever varying dye,
And wanton in their gay exchanges vie."

Its richness of hue and velvety softness of texture are produced by the seeming powder, in reality minute feathers or scales, sometimes intermixed with hairs, by which it is thickly overlaid in the manner of a roof with tiles. The number of these little plumes is immense, yet hardly so prodigious as the patience of certain Entomologists, who having counted, found them on the wing of a Silk-worm Moth to amount to 400,000 ; while as many as 100,735 were found comprised within a single square inch of that of a Peacock Butterfly. When stripped of its plumage, the wing, as all must have noticed, is left a thin transparent membrane, intersected by nervures and dotted with little holes wherein the plumelets were inserted. In a few instances (chiefly in tropical insects) spots are left by nature perfectly transparent, contrasting prettily with the rich velvet which surrounds them.

Several tribes of our native Butterflies are distinguished and classed according to their prevailing colours. Our fulgid Coppers,* and Fritillaries† with silver-spotted wings, look allied by their metallic lustre with the metallic productions of earth. Our Blues‡ imitate the azure tints of the sky, while

* *Lycæna*.

† *Melitæa*.

‡ *Polyommatus*.

others which display shades of light, progressively warming from white to orange, have been considered not unaptly as "sacred to the day." Those concentric circles of colour, called *ocelli* or eyes, which give, in some instances, such an accession of life and brilliancy to the wings of Butterflies and Moths, may be looked on as stars of distinction belonging to their order (*Lepidoptera*), conferred solely on one other of the insect race,* and eclipsed only by the magnitude and profusion of those which are lavished on the strutting peacock.

There are few people, perhaps, unwilling to bestow their meed of praise on the beautiful object we have just described, however they may be usually accustomed to defraud nature of her just tribute of notice and admiration; but how often has the Butterfly's wing, like other exquisite works of Creation, drawn from the beholder's lips, expressions ascending from the indifferent "Very pretty!" to the enraptured "How superlatively beautiful!" without giving rise to one thought about the taste and skill of its Divine Artificer, or one feeling about that bounty and benevolence which has led him to bestow all this elaborate ornament on a little creature, designed, as we cannot doubt, to minister to the delight of our admiring eyes,—to give (for us) a living charm to the flowers he emulates,—and in his emblematic story, no less than in his exhilarating flights towards the source of day, to raise our spirits above and beyond it to the source of all things bright and beautiful.

* The *Orthoptera*.

These, we are persuaded, are the primary objects of their Great Creator in filling the air with forms of life and grace, which, destitute of outward beauty, might have accomplished as well all the other ends of their creation. Let not, therefore, our own heedlessness and ingratitude frustrate a design so gracious.

Would we know some other obvious and essential uses of the Butterfly race, let us inquire of the thrush, the robin, and the wren, in whose bill-of-fare they hold a most conspicuous place; and remember how these papilionaceous epicures contribute to our pleasure and service, filling the woods and gardens with "most sweet music," and at the same time ridding them of a multitude of other insects, whose mischiefs we are less inclined to overlook than those wrought in its infancy by the admired Butterfly.



'In her hours of supposed privacy'

